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THE
DENTAL RECORD:

A
MONTHLY JOURNAL
OF
DENTAL SCIENCE, ART, AND LITERATURE,

DEVOTED TO THE INTERESTS OF THE PROFESSION.

EDITED BY
E. LLOYD-WILLIAMS, M.R.C.S., & L.D.S.ENG., L.R.C.P., L.S.A.

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THE DENTAL RECORD.

VOL. IX.

No. 1.

THE TWO LARGEST ODONTOMES KNOWN TO HAVE OCCURRED IN THE HUMAN SUBJECT.

By J. BLAND SUTTON, F.R.C.S.,

Hunterian Professor, Royal College of Surgeons of England.

THE seventeenth volume of the *Transactions* of the Pathological Society, London, contains under the following title:—"A case of removal of a part of the superior maxillary bone on account of a bony tumour in the nasal fossa," the description of a very remarkable tumour removed from the antrum of a Mahomedan woman, aged 26 years, at Monghyr, Bengal, by Dr. Theodore Duka.

The clinical features of the case are briefly as follow:—The right side of the patient's face was somewhat disfigured by a swelling in the infra-orbital region: the swelling encroached upon the orbit and nasal fossa, causing difficulty of breathing. There was a mucopurulent discharge from the right nostril, and the patient had



FIG. 1. AN ODONTOME. Nat. size.—DR. T. DUKA'S CASE (*Trans. Path. Soc.*) suffered considerably during a period of six years. The patient was supposed to be suffering from necrosis of bone, but when Dr. Duka commenced to operate, he found a large rounded bony tumour

which, after "a surgical contest," lasting three-quarters of an hour, he succeeded in extracting. The woman bore the operation without an anæsthetic and with great fortitude. The tumour is represented of natural size in Fig. 1 ; it had no connection with the surrounding tissues or bones, and weighed 1,060 grains. It was hard and as compact as ivory.

The tumour was submitted to a committee of the Pathological Society, consisting of Messrs. Campbell de Morgan, Prescott Hewitt, J. W. Hulke, and Dr. Murchison. The very careful "report" of this committee is illustrated by two drawings of the microscopical structure of the tumour. The report states that the bone-tissue differs in character from that ordinarily seen in exostoses ; indeed,



FIG. 2. A COMPOSITE ODONTOME. M. MICHON'S SPECIMEN. Nat. size.

the description, as well as an inspection of the drawings and an examination of the actual specimen (which is preserved in the Museum of St. George's Hospital), convinces me that this tumour is a *composite odontome*.

In describing this case, Dr. Duka states that he had shown this tumour to several friends ; one of them, Dr. Allan Webb, was of opinion that the nucleus was formed by a tooth-follicle escaping into the antrum of Highmore. Even this suggestion did not lead to the recognition of the dentinal character of the supposed exostosis.

The description of this case is followed by an abstract of a very

similar one reported by M. Michon.* The patient was a young Frenchman, aged 19 years, and Michon removed from his antrum, after "a surgical struggle" lasting an hour and a-quarter (without an anæsthetic), at the Hôpital de la Pitié, a large, hard tumour, weighing 1,080 grains. Fortunately, Michon's account of the case is illustrated by some admirable drawings of the tumour and its microscopical characters. The general appearance of the tumour is shown in Fig. 2. Its cut surface exhibited a laminated disposition. Microscopically it was seen to be made up of tissue, presenting wavy parallel tubules, having the appearance of exaggerated dentinal tubes; indeed, the history, physical and histological characters of this specimen leave no doubt in my mind that, like Dr. Duka's specimen, it is a *composite odontome*.

I find that Virchow refers to Michon's specimen in his work on tumours,† and draws attention to the stratification exhibited by it, and classes it under the *Hyperostoses*.

These two tumours are interesting clinically as well as pathologically. Until recently it was supposed that odontomes in the human subject were almost entirely confined to the lower jaw. Now we know of four cases affecting the upper jaw; the list includes the classical case of Hare of Limerick,‡ Jordan Lloyd's§ specimen, M. Michon's case, and the one removed by Dr. Duka.||

The histories of these four cases illustrate in a marked manner a fact I have elsewhere urged,¶ that odontomes, like teeth, cause little or no trouble until they begin to undergo a process analogous to eruption, then suppuration, discomfort and pain draw attention to their existence. In nearly, if not all cases, the true nature of the tumour has never been recognised until the patient "spat" it out when small, or the surgeon attempted its removal when large, under the impression that he has had to deal with a case of necrosis; and the true character of the tumour has not even then been always recognised, as in the cases which form the subject of this article.

* A full description of this case is contained in the *Mem. de la Société de la Chir.*, vol. ii., Paris, 1851.

† *Path. des Tumeurs*, French traduction, vol. ii., p. 27. The tumour is also figured by Lebert, *Traité d'Anat. Path.*, Atlas t. ii., plate 167, figs. 4 and 5.

‡ *Odonto. Soc., Trans.*, 1863.

§ *Lancet*, 1888.

|| *Trans. Path. Soc.*, vol. xvii.

¶ *Odontomes*, *Odonto. Soc., Trans.* 1887.

A CASE OF EPULIS (Osteo-Sarcoma); REMOVAL.

(No recurrence after 12 months.)

By WM. A. MAGGS, L.R.C.P., M.R.C.S., L.D.S.

FRANCES ANNE TAYLOR, aged 60, applied at the North-West London Hospital, for treatment of the mouth, on October 21st, 1887.

Condition of mouth.—A tumour was discovered on the left side of the upper jaw, in the neighbourhood of the second and third molars. The patient said that she first had pain on this side of the mouth about twelve or eighteen months ago, soon after the "gumboil" appeared. The growth was rather larger than a walnut, irregularly lobulated, and attached to the alveolar process by a pedicle two inches broad. The surface was glistening, very hard, and studded with miliary projections, but not ulcerated. It was movable from side to side, and could be circumscribed by the finger. There was no thickening of the jaw or bulging of the palate. The first left upper molar tooth was situated in front of the growth, and was loose. The three fangs of the second molar were *in situ*, but the wisdom tooth could not be detected. The cervical glands were neither enlarged nor hardened.

On the right side of the floor of the mouth the sublingual gland was enlarged, and projected over the jagged stumps of the first molar and bicuspid teeth on that side.

Treatment.—All sources of irritation were removed by the extraction of the first molar and three stumps of the second molar in the upper jaw on the left side and also the bicuspid and molar stumps in the lower jaw on the right. A month later the growth was ligatured with catgut, but as this had no appreciable effect upon the epulis, I advised the patient to be admitted into the hospital for further treatment.

On the 26th January, 1888, Mr. Frederic Durham removed the growth under chloroform, and afterwards gouged and scraped away a thin shell of bone. The patient made a good recovery and left the hospital a fortnight later. About three weeks afterwards she came to show herself to Mr. Durham, and on returning home through the streets was seized with hemiplegia. She was brought back to the hospital, and kept until April 6th, 1888, when she was sent out slightly improved.

Appearance of Growth.—The tumour obviously contained osseous

material, and microscopically it showed itself to be round-celled osteo-sarcoma.

Remarks.—Inasmuch as ligature was ineffectual, I felt satisfied that it was more than a fibrous tumour and that it required free removal. It is remarkable in not having given pain, and in being so slow of growth. The paralysis unfortunately precludes the possibility of treating surgically the lower tumour, and this is to be regretted, for the removal of the stumps has not had any good effect.

I can only speculate that it may be due to calculus.

NOTE.—I had an opportunity of seeing the patient during this month (December), and there is no recurrence of the growth. The glands are unaffected, the general health is good, and the paralysis is improved.

AN UNERUPTED BICUSPID.

By CHARLES F. RILOT, L.R.C.P.Lond., M.R.C.S. & L.D.S.Eng.

MRS. P., æt. 25, presented herself at the Dental Hospital early in November, complaining of a "lump" on the right side of the upper jaw.

Previous History.—In the preceding August the patient had had a swollen face, for the relief of which she applied to a private practitioner, who removed three stumps; the swelling disappeared, and then for the first time the "lump" was felt, which had not altered since in size or position.

Appearance on presentation at the Hospital.—There were no teeth or stumps on the right side between the canine and the second molar. The gum appeared healthy, and there was no sinus. Just above the alveolar ridge, in the bicuspid region, was a well-marked depression, and immediately behind this was the "lump;" a hard rounded ridge or prominence, painless on pressure, just in front, and pointing towards the anterior buccal root of the second molar.

Treatment.—An incision was made (under cocaine) down through the gum into the lump, when enamel was distinctly felt. On trying to trace the form and position of the tooth, there was a little uncertainty. It was evidently a bicuspid, for the two cusps could be traced, but its position could not be positively determined; it was *apparently* lying downwards and backwards, pointing towards the second molar. The opening having been dilated by a tent of lint,

the patient was put under ether and the tooth extracted. There was no difficulty in removal.

Appearance of the Tooth.—A bicuspid tooth, the crown well developed, marked at the junction of the middle and lower thirds by a distinct transverse groove. The root was stunted, being only slightly longer than the crown, and bulbous ; it was also marked by transverse grooves. The apical foramen was closed.

Remarks.—The points of interest in the foregoing case are :—
(1) The comparative rarity of bicuspids remaining unerupted.
(2) The sudden appearance of the lump. (3) The dwarfed and grooved character of the tooth. The case would have presented additional interest if we knew what teeth originally occupied that part of the jaw, but no definite history could be elicited on this point. The sudden appearance of the " lump " was probably due to absorption of surrounding parts following extraction of the stumps, and not to any movement in the tooth itself. Removal was obviously the only treatment (1) on account of the inconvenience it was causing, and (2) from the improbability of its ever erupting in its proper position.

TREATMENT OF PULPLESS TEETH.

(A Paper read before the Birmingham Dental Students' Society.)

By FRANK HAMPTON GOFFE, L.D.S.Eng. and Edin.

As it is the ill fortune of many to have teeth come under their care with either exposed or dying pulps, I thought that it might be interesting to put before you the various methods that have been recommended for their treatment.

The arguments for and against capping still go on, but it seems to me that there is a growing tendency to destroy all pulps exposed by caries—for a long time past I have given up trying to save exposed pulps.

Capping is very apt to fail from the fact that septic fluids have already been in contact with the pulp, and you cannot determine the date of exposure and injury ; so when the pulp has been capped some time you find it becomes sensible to hot and cold fluids, then periostitis ensues. Our knowledge of the tooth structure has made us not so anxious to preserve the pulps, as we know that the dentine is in active communication with the cementum, which again derives its nutriment from the pericemental membrane, so

that the tooth is not dependent upon the pulp for its life ; but still we must remember that there is more work thrown on the vessels of the lining membrane after the death of the pulp.

Your first attention to a carious tooth is to remove the *débris* from the cavity, then syringe it out with a weak carbolic solution. Now apply the rubber dam, which is one of the most important factors in antiseptic surgery for filling teeth, for by it the tooth is cut off from many sources of infection, and the drug used is not weakened or neutralised by the saliva.

Now, having the rubber fixed in position, you can remove the decay, and if the pulp is exposed, my practice is to wound it to induce hæmorrhage, treating it with carbolic acid to remove any coagulum, in order to allow your dressing to be in absolute contact with the pulp. In the case of the front teeth you can apply cocaine dissolved in carbolic acid for two or three minutes, when the nerve can be removed with very little pain.

In order to effect devitalization the usual dressing is Baldock's nerve paste. The following recipe is the one I generally use :—

R Acidi Arseniosi gr. xii.
Morphiæ Acetatis gr. ij,
Creasoti q.s.
Misce.

I find that the intense pain is usually allayed in about a quarter of an hour. I always leave the dressing in for two or three days ; it is a great fallacy for dentists to insist on seeing their patient the following day, as the small quantity of arsenic used cannot possibly do any harm if it is sealed up securely ; and it seldom renders a second application necessary. Occasionally, however, a small portion of undevitalized nerve still remains at the extremity of the canal, which the application of cocaine and carbolic acid will enable you to remove by means of a nerve extractor annealed in the spirit flame and passed to the apex of the fang ; any remaining tissue should be removed with a Donaldson's nerve canal cleaner, subsequently drying with a hot air syringe.

The canal should then be enlarged with flexible drills or reamers, carefully avoiding forcing any *débris* through the foramen.

It need hardly be said that all the instruments should be quite clean and rendered aseptic ; this can be done by wiping them with a solution of carbolic acid—1 in 40.

After cleansing the fangs, hot air should be injected for some time to destroy any lurking micro-organisms. A question now

arises whether you should dress the fang before finally filling, which if you determine upon, one or other of the subjoined antiseptic drugs should be applied, viz., the essential oils eucalyptus or cloves, together with iodoform or the time-honoured carbolic acid.

The most powerful antiseptic agent we have is bichloride of mercury. A very good way of using it is a solution in alcohol 2grs. to the ounce. According to Dr. Miller's table the antiseptic drugs act as follows :—

						Development of fungi arrested.
Bichloride of mercury	..	..	..	..	1	in 100,000
Peroxide of hydrogen	..	..	..	..	1	in 8,000
Iodoform	..	..	..	..	1	in 5,000
Eucalyptus..	..	..	..	..	1	in 600
Carbolic	..	..	..	..	1	in 500
Arsenic	..	..	..	..	1	in 250

Here I might mention the new drug iodol. All the therapeutical properties of iodoform are claimed for it, but without its disagreeable smell or taste ; it is a light fawn-coloured substance, which is almost insoluble in water, but freely so in ether or chloroform and olive oil ; it contains about 90 per cent. of iodine.

Iodol can also be used as iodolised wax, which is a very good substitute for those who use iodoform and wax for fang filling, as it melts at a lower temperature and is more easily packed.

The system advocated by Mr. Coleman is to thoroughly clean out the pulp chamber ; then apply a minute quantity of arsenic and proceed to fill the cavity in the ordinary way. It seems to answer well with some practitioners, as arsenic is a powerful antiseptic.

Another method is to mix together oxychloride of zinc and iodoform, then fill the fangs, using strands of wool to thicken it ; this is apt to cause some amount of irritation for a short time, so you can substitute the oxyphosphate for the oxychloride of zinc. A solution of gutta percha and iodoform in chloroform, or the root fillings of gutta percha made by the S. S. White Co. are also useful as root fillings. I think one of the easiest to use is plaster of Paris mixed with iodoform and water, and worked into the canals with a few strands of wool ; it seems to answer the purpose perfectly.

A ready but less perfect way of treating pulpless teeth is by the operation of rhizodontophy ; that is, after cleaning out the pulp cavity and fangs to cap over them, and then with a sharp instru-

ment drill a perforation level in the gum into the fangs, thus leaving a drainage tube for the escape of gas or fluids.

If the foregoing plans are followed carefully, rendering all instruments, &c., aseptic before using, I think there is very little fear of any complications arising afterwards. As inflammation is most apt to occur during the first few weeks after filling, a few capsicum plasters should be given to the patient, with instructions to apply them in case of any irritation arising.

Teeth occasionally come under our charge with pulps already dead, without inflammatory effusion of the gum, but with pulps dead and an abscess formed or forming.

First thoroughly open up the pulp chamber, in order to gain direct access to the canals ; loose *débris* should be washed out with weak carbolic solution, and the canals thoroughly cleansed with canal cleaners and a Gates Gliddon drill, which has the great advantage that it is a blunted drill and not likely to go through the apical foramen.

Peroxide of hydrogen should be pumped up to the end of the roots by means of a broach with a little twisted cotton wool round it until all odour has entirely disappeared.

Bichloride of mercury 1 in 1,000 can be used in the same way, alternately with the peroxide of hydrogen, or a mixture of the two may be used thus :—

Hydrogen peroxide f. ʒ.

Mercury perchloride gr. ij.

In treating these cases it is very important to use the hot air syringe after every application of the hydroxyl.

The peroxide of hydrogen is a very unstable compound, and so should be quite fresh and kept away from the sunlight, which decomposes it. It very readily gives off oxygen, being itself converted into water ; this oxidises or destroys all the micro-organisms and pus cells. Therefore it is advisable to continue pumping it up as long as the frothy bubbles appear ; when these cease you can wipe the fangs out with chloroform and proceed to fill the roots with whatever materials you prefer. Peroxide of hydrogen is not a new antiseptic ; it was introduced as a medicine by Dr. Richardson in 1858, and as an antiseptic for dental surgery by Dr. Coffin in 1883.

There is no question that the immediate treatment is gaining ground ; and when the pulp has been recently destroyed with

arsenic, and in cases of patients coming some distance, when a visit more or less is of importance, this treatment is invaluable.

If an abscess has already formed, the apical foramen should be enlarged and hydroxyl and perchloride of mercury pumped through the foramen until there is no discharge of pus down the root and no froth appears ; this will usually occupy about ten minutes. If the canals are too small to admit the broach, it is far better to enlarge them till you can pass your instrument, as you must have clear openings to effect a perfect cure.

Immediately the roots are quite clean and aseptic, I proceed to fill them, as I think very little is gained by dressing the root time after time. As soon as the canals are rendered aseptic, the cause of the abscess is taken away, and with proper treatment, the cause being removed, the effect can also be quickly remedied.

The best and quickest way, if all the pus cannot be brought away through the root, is to open the abscess and remove the diseased part through the alveolus.

Formerly, this caused considerable pain, but now it can be performed quite painlessly. I take 1 gr. of hydrochlorate of cocaine and dissolve it in carbolic acid, and inject it with the hypodermic syringe. Dr. Vian pointed out that carbolic was itself a good local anæsthetic, and with this solution I have had very good results.

After waiting three to five minutes the alveolus should be perforated and an opening made into the abscess ; this cavity should be syringed out with peroxide of hydrogen, and if the abscess is very large or chronic, I plug the sinus with lint soaked in carbolic.

At times great benefit will be derived from a little medical treatment, the sulphides having a great effect on suppuration ; the best of these is the calcium sulphide, which will often give the patient considerable relief.

I have put before you, as well as I am able in such a short paper, the various methods for the preservation of teeth after the death of the pulp ; the retention of the roots in a healthy state will become no doubt of greater consequence as they are utilised more and more for mounting crowns and bridge work.

EXTRACTS.

A NEW ANTISEPTIC.

MESSRS. ELLENBERGER AND V. HOFMEISTER have recently published a paper in the *Archiv für experimentelle Pathologie und Pharmacologie* upon some new derivatives of naphthol, namely, certain acids derived from alpha and beta-naphthol, which they found to be more powerful antiseptics than either salicylic or carbolic acids.

One of these compounds is alpha-oxynaphthoic acid (or alpha-naphthol-carbonic acid). This is prepared in a similar manner to salicylic acid, naphthol being substituted for phenol. In fact, it is prepared by bringing together, under strong pressure, and at an elevated temperature, alpha-naphthol, sodium and carbonic acid gas. Its constitution is expressed by the formula : $C_{10}H_6.OH.CO_2H$.

The Chemist and Druggist thus abstracts a portion of the paper : The compound is nearly insoluble in water ; 100 Cc. in the cold only take up 0.0535 gramme. The acid sublimes unchanged between 90° C. and 100° C., and melts at 186° C. with evolution of carbonic dioxide. It is soluble in the alkalies and alkaline carbonates, forming salts which are colourless and of neutral reaction, and more soluble in both hot and cold water than the acid itself. Thus 100 Cc. at 18° C. dissolves 6.37 grammes of the salts. The acid is precipitated from its salts by hydrochloric, sulphuric, nitric, and acetic acids, but not by carbonic acid gas. Solutions of the salts ultimately decompose when kept even at normal temperatures. The sodium salts, on the addition of fuming red nitric acid, change to a beautiful violet or blue colour, slowly passing into red, by which reaction the acid may be always identified and distinguished from beta-oxynaphthoic acid, with which it is isomeric, but which with fuming nitric acid affords only a greenish-yellow colouration.

Alpha-oxynaphthoic acid and its combinations with alkalies have been studied by the authors with regard to their effects upon the body in health and disease, and upon the various organs of the animal structure. Fresh meat juice began to putrify in from about twelve hours when kept at from 37° C. to 40° C. The addition of 1 : 20,000 of oxynaphthoic acid was found to retard the decomposition forty-eight hours, and with a proportion of 1 : 2,500 no bacteria could be detected in unboiled liquids after seven days. When the liquid had been boiled, an admixture of 1 : 1,200 was found to be amply sufficient for the prevention of putrefactive change. In the

proportion of 1 : 600 decomposition was stopped in liquids undergoing rapid change. The sodium salt, however, had to be added in the proportion of 1 : 300 to prevent decomposition, and when this was actively progressing, the salt named was powerless to check it. The effect of B-acid was very similar.

It is surmised that these compounds will also turn out to be antipyretics, like salicylic acid, and if they are to be used as such, probably they will be used in the form of sodium salts.

Experiments thus far conducted to ascertain the destructive effect of these agents upon bacteria are reported to have given very favourable results.—*American Druggist*.

DENTAL QUACKERY AND FALSE PERSONATION.

MR. TURNER, in his excellent address to the past and present students of the Dental Hospital, remarked that our poor and our quacks will be always with us, and the truism admits of absolutely general application. But the presence of the latter class of persons, though incapable of total exclusion from the ranks of the dental profession, may yet be, in a considerable degree, brought under control by the judicious exercise of powers placed in our hands by the legislature. Of these powers foremost stands the issue from schools and colleges of a supply of adequately educated practitioners capable of rendering to the public the full and complete service of dental surgery. The provisions of the Dentists' Act have rendered such a supply of practitioners practicable by placing educational control in the hands of the surgical colleges, and the supervision of the education, with the qualifying registration, in the hands solely of the Medical Council. Under these stable powers the dental student is now, and for some time past has been, required, before entering upon his professional studies, to pass a prescribed examination in the subjects of general education in common with the medical student, the educational equipment at starting being alike in the dental and medical student, and the course of professional studies for a time proceeding on similar lines. But in order that the dental student may acquire an adequate amount of manipulative skill, an acquisition attainable in youth only, save in exceptional instances of exceptional aptitude, it is necessary that he should devote a fair share of his time from the outset to dental operations under competent instructors. The fingers must grow to their work, a condition necessary to the

attainment of a high degree of excellence in many callings equally with dentistry, but not more necessary in any of them than in the latter.

It may be justly said that the dental student, when he has honestly conformed to the existing education, and gained by examination a place for his name in the *Dentists' Register*, enters upon practice more fully educated than any other professional man ; for he has through a period of four years been almost daily engaged in performing under competent instructors all the operations embraced in dental surgery. Professional education cannot go further, and if this point is not reached, the Medical Council, as the supervisor, is at fault primarily, and the Colleges are in a scarcely less degree blameable.

It is within the reach of these powerful bodies—trustees they may be called of the dental profession, on behalf of the public and of the profession itself—to abate, if not wholly to suspend, the mischief and scandal of dental quackery ; and there are unmistakeable signs that the quack is now obliged, for profit's sake, to shift his ground, and try the effect of collective in the place of the failing personal puffs. Dental dispensaries, and institutions where marvels are said to be achieved by a body of selected operators, send forth their invitations to the public.

A second power of abatement lies in the effective power of successful prosecution of unregistered persons who proclaim themselves dentists, &c. The many cases undertaken by the British Dental Association have invariably led to conviction and the attendant fines. In this matter the Dentists' Act, in its penal clauses, is quite free from the baneful ambiguity of the Medical Act, and in this respect needs no further amendment. False personation by unregistered persons could, there is little doubt, be dealt with by the Association as a matter of fine, but the registered cover is beyond its reach.

The third great power—the power of professional life or death, by the removal of a name from the *Register*—lies solely in the Medical Council, and there is no appeal against its decision if the provisions of the Act are strictly followed. A permanent Dental Committee is provided, and its findings as to the facts of a case submitted for its investigation are final, and the Council must act upon these facts. It is not allowed to accept the findings of any other body, although that body has within its powers removed the

name of a licentiate from its register. For instance, the Irish College of Surgeons grants its Licentiate-ship in Dental Surgery on a condition signed by the receiver that the qualification shall be forfeited if he attracts business by means of public advertisements. A case of breach of contract occurred, the name was struck off the College register, and was ultimately erased from the *Dentists' Register* on the finding of the Dental Committee that the breach of contract with the circumstances attendant thereon was, in the words of the Act, disgraceful in a professional respect.

But the converse of this position does not in the Dentists' Act hold good. For if the Medical Council erases the name of a Licentiate from the *Dentists' Register*, the name must also be erased from the List of the College from which he obtained his Licentiate-ship, and must be again restored to such list, if the Council directs its restoration to the *Dentists' Register*.

The minutes of the recent meeting of the Medical Council contain an account of the powers of erasure of names from their lists of members, &c., possessed by the several medical authorities. Some appear to have ample powers, in others the power is less clearly defined, and some bodies have no power of erasure. Some would like to have the power, others require the power to be better defined, while others, on the contrary, do not desire to possess the power of erasure, considering that the Medical Council, as a body at the head of and representing all the authorities, should undertake the investigation of cases of misconduct, for it alone can remove a name from the *Medical Register*, and those who render themselves liable to erasure from a College list would care little for its removal therefrom, so long as it is allowed to remain on the *Medical Register*. The framers of the Dentists' Act took this view of the case, and much may be said in its favour. One argument against the Medical Council taking the initiative in the investigation of professional misconduct is based on the great pecuniary cost that attends every action of the Council. Still, if need be, this excessive cost may be very greatly reduced. It is believed that a guinea is the usual fee of members for the attendance at meetings of Councils of the medical corporations. Yet the office is attended with so much honour and influence that the place is eagerly sought by distinguished members of the profession. The honour and influence that go with a seat on the Medical Council are far greater than that attendant upon the corresponding office in a medical corporation.

The medical authorities and Medical Council have done much, are doing much, and can do much more by means they already possess towards the gradual abatement of quackery. By punishing disgraceful conduct by erasure, and by rendering an adequate education compulsory, they can render quackery profitless unless action is checked by the exhaustion of funds brought about by the excessive cost of their meetings. In the minutes already referred to, the President states that "a recent (medical) case, for example, cost for sittings of the Council £294; it would have been £326 had all the members been present"

It is a good sign that attention to excess of cost is brought before the Council by its President, and in other respects the minutes of the last meeting give promise that better times in the general regulation of the profession, regarded as a whole, are coming.—*Leading Article, British Medical Journal.*

DEATH FROM ALVEOLAR ABSCESS.

At a joint meeting of the American and Southern Dental Associations, Dr. Marshall reported the following case as having occurred at the Mercy Hospital, Chicago. The patient was a labourer on the city railroad, who was admitted to the hospital April 26; pulse rapid and wiry, 105; temperature 102°; respiration 22; face badly swollen, and a peculiar crepitation manifested itself. The diagnosis was emphysematous gangrene. The swelling extended down on the neck nearly to the clavicle. Incisions had been made by the railroad surgeon on either side about an inch anterior to the angle of the jaw, that on the left unfortunately cutting off the facial artery, causing a severe hæmorrhage. An offensive discharge constantly oozed out of this wound. The patient in health was a strong, robust man, with no record of former sickness. About three weeks previous to his admission the inferior left wisdom-tooth, which was decayed, became painful and sore to the touch of the tongue or of food in mastication, and shortly afterwards an alveolar abscess had formed and from thence the trouble extended to its present condition. The openings were irrigated with bichloride, 1 to 2000, and an iodoform dressing was applied. Brandy and quinine were prescribed in full doses, and all the nourishing food the patient could take. On May 2, Dr. Marshall first saw the patient, who was then etherized and the two inferior wisdom-teeth were extracted. The next day the patient spent some time sitting in his chair. On the 6th the speaker removed several

large, loose masses of necrotic tissue from the region of the neck under the jaw. On the 8th profuse hæmorrhage occurred on the left side where the facial artery had been severed, and the pulse immediately became weak and rapid, reaching 140. In addition to brandy and quinine digitalis was prescribed, which decreased the heart-beats. The next day the patient was very weak and speaking with great difficulty, owing to the swollen condition of the tongue. On irrigating, the fluids passed into the mouth freely. Another large piece of necrosed tissue was removed from the right side. On the 10th the patient was still very weak, with bad diarrhœa, which an opium pill checked somewhat. On the 11th another severe hæmorrhage from the severed artery occurred, shortly after which the patient fainted, and died in the evening from exhaustion. The idea that this patient may have been poisoned by a filthy knife may be dismissed, as the gentleman who first operated is one of the best and most careful surgeons in Chicago. Dr. Marshall believes the case to have been simply the result of an alveolar abscess which was allowed to run too long. If the dentist who first saw the case had extracted the offending tooth or had properly treated the abscess, the patient's life would have been saved.—*Dental Cosmos*.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE usual monthly meeting of the above Society was held at 40, Leicester Square on the 3rd ultimo. Mr. S. J. HUTCHINSON, M.R.C.S., L.D.S.Eng. (Vice-President) was in the chair, and there was a large attendance of members.

The Librarian stated that the only addition to the library he had to announce was a book, "La Dentaire," which the author, Dr. Kuhn, had kindly presented.

The Curator said that he had recently been fortunate in obtaining the skull of a rodent, the Paca, which had a most extraordinary growth of the zygomatic arch. It was a specimen of which they had no example in the museum, and he had much pleasure in adding it to their collection.

Mr. J. BLAND SUTTON read a short paper entitled

SOME CONGENITAL PHARYNGEAL TUMOURS.

He said that recently some specimens had come to his notice

which led to conclusions of some interest, and which resembled the case of cleft palate and median fissure of the lower lip of a calf brought before the Society in 1887 by Dr. Walker (*vide* DENTAL RECORD, vol. vii., p. 214).

His first specimen was the head of a foal having a median hare-lip and cleft palate. Suspecting it to be caused by a teratoma, a median sagittal section was made of the head, leading to the discovery of a remarkable tumour wedged in between the superior maxillæ, suspended from the under surface of the base of the sphenoid by a pedicle, and of irregular oval shape. It consisted of two parts; the upper had some resemblance to a superior maxilla, and presented three well-formed molar teeth, which, including the parts, were covered by thick mucous membrane. The lower part consisted of two mandibles fused throughout their length, and presented three well-formed molar teeth on each side. An extra tongue was attached to the normal tongue of the foal on the right side of the lower portion of the tumour. An examination of the base of the skull revealed the remarkable fact that the foal possessed four sets of olfactory nerves.

His next specimen occurred in a pig having one head which presented a meningocele posteriorly. The snout had three narial orifices; the tongue was bifid, and the palate had two clefts. The pig had two bodies with the normal number of limbs, and the genito-urinary organs (male) quite distinct. The œsophagus, which was single, separated two larynges and led into a stomach common to the two bodies. On splitting the symphysis menti and separating the parts, Mr. Sutton found a tumour hanging by a pedicle from the under surface of the base of the sphenoid, consisting of two mandibles fused together, covered with mucous membrane, presenting hairs, and beset along the outer margin with teeth which had been erupted. Removal of the tumour discovered a much smaller peduncular body independently attached to the palate and of quite as much importance as the larger mass beside which it hung.

His third specimen—the head of a pig—contained a tumour wedged in between the upper mandible, presenting unerupted teeth and a piece of pilose skin; there was also a considerable fissure in the palate. The tumour in the palate was connected by a fibrous band with a bony mass, covered with pilose skin and mucous membrane, presenting unerupted teeth lying in the floor of the mouth. The adventitious mass represented two supernumerary

mandibles fused in the middle line. The tongue was double. Examination of the palate showed a teratoma lodged in between the maxillæ and comprising coalesced supernumerary maxillæ, containing teeth, and covered with piliferous mucous membrane.

The three specimens were interesting, inasmuch as they were examples of a process termed dichotomy, which is responsible for a large number of malformations.

It was with some anxiety that he proceeded to examine microscopically the small pedunculated body hanging beside the mandibles in the double pig. Histologically it conformed in every way to like tumours in the human subject; it was chiefly composed of fibrous tissue, covered with skin, and possessing sebaceous glands. Associated with such extensive dichotomy as shown, it could not fail to suggest that such tumours, occurring in otherwise normally formed mammals, were slight manifestations of a process which finds its expression in some forms of duplex monsters.

In conclusion, he remarked that the same process which produced a double monster from a single germ acted also in a similar way upon germs of teeth, for gemmation was frequently due to dichotomy of an originally single tooth-germ.

The PRESIDENT said Mr. Bland Sutton's communication was an exceedingly interesting and valuable one. If any gentleman wished to ask any questions in connection with it, he should be glad to hear them.

Mr. C. S. TOMES said he would like to ask Mr. Bland Sutton if he could give any explanation of the fact that the supernumerary formation had in each instance shot ahead of its host? In respect of calcification, the teeth were far more calcified than they were in the host.

Mr. BLAND SUTTON replied that it was an exceedingly difficult matter to explain, but it was, nevertheless, the fact.

Dr. ST. GEORGE ELLIOTT was then called upon to give a casual communication, and said:—

Mr. President and Gentlemen,—Before taking up the subject of copper amalgams, I would like to exhibit Dr. Taggart's corundum disc maker. You will see that it consists of a large pair of pincers; one jaw contains the dies and blank mandrel, the other is a mere pressure plate. Broken pieces of corundum wheels are softened by heat and placed in the die, and, on closing the handles, the corundum is forced on the previously roughened surface of the mandrel.

The mounted corundum is then taken from the die and placed for a short time in alcohol, to remove the smooth shellac surface. Not only can every dentist make his own corundum points, but they are better than those ordinarily sold, inasmuch as the corundum is made upon the mandrel and cannot get loose.

I would also call your attention to the S. S. White Asbestos Soldering Block. You will see it is a circular block, about 1 inch thick, hollowed out. By placing two of these together, you have an excellent annealing oven, either for steel or gold work.

COPPER AMALGAMS.

As it has been stated in the professional journals, on the authority of some prominent dentists, that copper amalgam does not shrink, and as this was quite contrary to my own experience, published by this society some years ago, I have undertaken a more extended series of experiments, the result of which is now before you.

I have tried four modes of ascertaining the shrinkage, viz., stopping, inserted in celluloid, human teeth, glass tubes, and the specific gravity test. The latter is the only one I consider of much value, and it was introduced by Mr. Charles Tomes many years ago. The reason why the other modes are objectionable is, that the co-efficient of expansion is not the same as that of a human tooth, glass probably coming the nearest.

We have here twenty-four experiments with tubes, twenty-one of which are with copper amalgam, while the remaining three are with silver tin alloy. You will notice that all the copper amalgams have allowed the red ink to pass them, while the silver alloy has shown itself to be fairly tight.

TABLE OF SHRINKAGE.
SPECIFIC GRAVITY LIST.

5	Specimens of A	...	...	...	·65	}	COPPER
1	"	"	A	...	·54		
2	"	"	B	...	·66		
4	"	"	C	...	·61		
1	"	"	E	...	·35	}	SILVER ALLOYS
2	"	"	F	...	·15		
1	Specimen of Silver Coin	...	...	...	...	·21	
1	"	"	Copper Amalgams and Silver Filings			·48	

Masses tested weighed ten to twelve grammes, kept for six days at a temperature of one hundred degrees.

We have on the wall a table which I have drawn up of the absolute shrinkage of some nine or ten specimens of copper amalgam. When I brought before you similar tables some time ago, the accuracy of my experiments was doubted, because a very remarkable result was very fully shown. The earlier observations have, however, been quite corroborated by the more recent ones. You will notice that the amalgam does most of its shrinking within the first twenty-four hours, and that subsequently it seldom remains the same for any length of time, shrinking and expanding in a small but measurable quantity. To decrease the probable errors which might arise in this delicate form of investigation, I have used large masses of amalgam. In the earlier experiments I took less than two grammes, while in the present ones I used ten to twelve grammes. There is a fair amount of agreement in the shrinkage of different specimens of copper amalgam, 60 to 80 milligrams in 10,000.

TABLE SHOWING DAILY FLUCTUATION.

	November 6	November 7	November 8	November 9	November 10	November	November 13		Maximum Shrinkage.
No. 1	12'041	12'113	12'117	12'116	12'114½	12'114½	12'115		76
„ 2	12'010	12'081½	12'085	12'087	12'085	12'088	12'089		79
„ 3	12'015	12'087½	12'095	12'092	12'098	12'098	12'101		86
„ 4	12'010	12'080	12'085	12'087	12'093	12'094	12'098		88
„ 5	12'016	12'089	12'087	12'089	12'091	12'093	12'095		79

The above represents in milligrams the daily change, increase in weight, showing shrinkage.

As a matter of comparison, I have combined with this table similar tests, with the same alloy used in the tube experiments. You will see that the percentage of shrinkage in copper amalgam is from 5 to 7 per cent. of the mass, while with one of the two specimens of silver alloy it is a trifle over 3 per cent., the other a little more than 1 per cent., or, in other words, the best copper amalgam shrinks four times as much as the silver alloys used.

Now we come to the question of edge strength. This table shows the breaking strain of the several amalgams already alluded to. The breaking strain was obtained by placing small amalgam bricks, one millimetre in thickness by four in breadth and twenty-five in length, in a crushing apparatus I made for the purpose. These bricks are formed in a steel mould, which we have upon the

table. Five bricks of each kind of amalgam were tried, and each brick gave me from five to ten breakages. You will notice the enormous difference that exists between the maximum and minimum, some bricks giving way at a pressure of less than an ounce, while others gave me as high as seven pounds. The difference in strength of the amalgam bricks is owing more to the manner of treatment than to the difference in kind. To get the best results, the mercury should be fully driven out of the mass before it is broken up in the mortar. If the ordinary directions are followed and the spoon removed from the heat on the appearance of the globules, it will be found that the amalgam is comparatively weak. It is better to drive off an excess of mercury by overheating and subtracting, subsequently adding what may be necessary to obtain the proper plasticity, than it is to allow some of the combined mercury to remain in the mass. The bricks on the table which are so weak are those made by underheating the specimens. One of the several specimens, both in the specific gravity and breaking strain tests, has been heated and worked over six consecutive times, and I find little, if any, injury resulting.

BREAKING STRAIN.

Bricks 1m. \times 4m. \times 25m.

Kind	No. of Experiments.	Average Strain in ounces.	
A.....	52	$12\frac{1}{16}$	Home-made Copper Amalgam
A ¹ ...	36	$4\frac{3}{16}$	" " " underheated
B.....	28	$33\frac{1}{4}$	" " " 6th heating
C.....	37	38	Copper Amal. from manufacturer
D.....	30	$34\frac{1}{8}$	" " " "
G.....	26	$41\frac{3}{16}$	} " " " "
G.....	23	41	
G.....	20	$34\frac{3}{8}$	
E.....	27	$55\frac{1}{8}$	} Silver Alloy from manufacturer
E.....	23	$69\frac{1}{16}$	
E.....	24	$23\frac{1}{16}$	
F.....	35	$63\frac{3}{16}$	} " " " "
F.....	4	60	
F.....	17	$58\frac{3}{8}$	

It will be observed that the silver alloys tested give a better result, not only as regards shrinkage but edge strength. It has been stated in the test books that silver is the expanding element of silver alloys. In this series of experiments I have only tried one specimen of silver, and that is standard or coin silver mixed with mercury.

As you see, I fail to get any expansion but a considerable amount of contraction. Of course, a single experiment does not prove anything, but I hope to go into the subject more fully.

I have tried a curious experiment in mixing coin silver filings with plastic copper amalgam. The gravity test has shown a diminution in the amount of contraction.

Amalgams of all kinds are very uncertain bodies; there is a molecular change going on, apparently indefinitely, and although it may not be sufficient to be a serious practical objection, yet it certainly must be one cause why amalgam fillings are not always satisfactory.

The directions given by manufacturers of copper amalgam are that it shall be washed in dilute sulphuric acid and subsequently in water. You will see by the litmus paper that, when these directions are closely followed, the acid is not fully eliminated; after washing several times with water I wash with soap and water.

One word in regard to the manufacture. Copper amalgam is, as you know, made from the sulphate of copper; this is dissolved in water precipitated by the action of iron or zinc. I have handed round for your inspection two specimens, one done by aid of zinc, the other of iron. While the zinc one has a fairly good colour, the iron has produced a marked effect upon the other, the oxide of iron showing itself by its red appearance. One ounce of the crystals ought to produce an ounce of amalgam, costing sevenpence. The rapidity of precipitation is vastly increased by the aid of heat. I have not found by these experiments that the precipitation by iron gives, in any respect, better results than that of zinc, while the colour is certainly inferior.

Finally, gentlemen, it seems to me that it has been fairly proved that copper amalgam shrinks much more than some silver alloys, and that it has also less strength, but, at the same time, it is undoubtedly a material of very considerable value as an antiseptic in the stopping of teeth of poor structure.

Mr. W. E. HARDING (Shrewsbury) asked whether it made any difference whether the copper was precipitated with iron or zinc?

Mr. AMOS KIRBY (Bedford) said that the results which he had obtained from his own experiments were different from those of Dr. Elliott. In all cases he found silver amalgams expand considerably; that precipitated silver and coin silver both expanded—when placed in the tube they either split the tube open or projected

from the orifice. When measured with a micrometer some showed as much expansion as 1 in 25 of the diameter ; the only way he could account for the difference between Dr. Elliott's results and his own was that he (Dr. Elliott) spoke of his silver amalgam containing a small amount of copper ; he (Mr. Kirby) found that the addition of any other metal modified the action considerably.

Dr. ELLIOTT, in reply, said, with regard to Mr. Harding's question, he had never used iron, and therefore could not say. With regard to the expansion of silver, he was aware that it was an accepted opinion that it *did* expand, but he could only say that he had made some 300 experiments simply hunting for expansion and had not found it. Of course, he could only speak from his own experience ; others might have been more successful. Then, with regard to what Mr. Kirby had said, the fact that he (Dr. Elliott) used silver and copper, while Mr. Kirby used silver only, would be, he thought, a possible, but not a probable, explanation of the difference of their results.

Mr. W. E. HARDING mentioned a case of tooth fracture, stating that in the previous week a patient, aged just 17, came to him and told him that last January she fell down and fractured her front tooth. It was broken in two pieces, the fracture extending in a perpendicular direction. On extracting the tooth, he found that the two halves had become united by secondary dentine. The fracture extended across the pulp chamber.

The PRESIDENT said they were very much indebted to Mr. Harding for his communication ; if he could let them have the tooth, the Curator would, no doubt, make a microscopical examination of it.

Mr. Harding offered half the tooth, a compromise which the President accepted with thanks.

Mr. W. MITCHELL then read his paper, entitled

SOME SUGGESTIONS ON METAL CAP CROWNS.

He did not propose to go into the evolution of crown work, as that was already too well known to the educated dentist to require even a passing notice.

He considered that no method of crowning teeth or roots gave more satisfactory results than that of the metal cap crown, owing to its cleanliness, its indestructibility, and its adaptability to the greatest variety of cases. Its capacity for restoring articulating surfaces was limited only by the skill of the dentist. The object of his paper was

to discuss the *practical* part of the subject which hitherto, he thought, had been somewhat neglected.

If the tooth or root were in a healthy condition, he proceeded to prepare it for the cap. This might be done in various ways, principally by means of corundum wheels used on the engine, for the purpose of restoring the bite or bringing about adjustment between adjacent teeth. In bicuspid or molars, when the root was on a line with the gum, he found it a good plan to put one, two, and even three good platina or dental alloy pins in the pulp canals, first fitting them and making them the proper length, and then driving them home ; this gave support to the cap, especially when it had much work to do. Having coned the root or tooth, he carefully removed all enamel remaining round the cervical margin with an instrument, by inserting the point of it under the free margin of the gum, and with a draw-cut rapidly trimming off the enamel. The most careful preparation of the neck of the tooth was essential to the success of the operation, for the fit and ultimate retention of the cap depended upon it. The tooth was then ready for the cap, for which he used coin gold, rolled to No. 5 B P G for the band, and No. 3 for the top ; he preferred this because of its uniformity in working, its colour in the mouth, and its durability. In preparing the band he used no model other than the tooth itself, and contended that this was the only way to get a perfect fit ; another reason being that it could then be more easily determined how to trim the band to adapt it to the requirements of the gum. He next took a piece of visiting card and approximated it to the height and length for the plate required for the band ; then, with a pair of moderate-sized pliers, having one jaw flat and the other half round, he proceeded to adapt the plate to the tooth, making the plate slightly flaring towards the grinding surface. When he had fitted the crown as well as possible, he closed it a little by squeezing between the fingers, so that it sprang over the tooth when put on for trial ; should it not pass evenly under the gum, it should be trimmed until it followed the contour of the gum.

He recommended manicure scissors with short but heavy blades as the most suitable for cutting the gold. A line should be left for lapping, and the lap should be left on the outside for convenience in marking and trimming. Having marked along the lap with the point of the instrument, the band should be removed from the tooth, closed about a line, and soldered, which was most easily done over an ordinary Bunsen. He preferred a lap joint to an edge one,

because it was more easily made, and saved time. The band might now be tried on ; if too tight, it should be stretched to the required size by lightly hammering it on the horn of an anvil. He then chamfered the edge of the band that went under the gum and burnished it. After the band was started he assisted it to where it was ultimately wanted by driving it on with a steel mallet. Having judged the height the band should be left, he trimmed if necessary, and contoured, after which, he flattened the surface of the band by holding its top edge against the flat side of a corundum wheel and giving it a slight rotary motion.

The plan he recommended as the simplest for making the tops was to take the teeth that had been extracted, or models for impressions of natural teeth, invest the roots and crowns in plaster almost to the grinding surface, leave the block about two inches high, and trim, leaving a base about an inch square. He found squaring and chamfering the corners left it the best shape for drawing for the marble dust mould. The face of the block should be made flat, and left $\frac{1}{16}$ in. wide. After securing the model, a sand—or, better—marble dust mould was made ; this was finished with file and graver, and polished on a lathe.

No counter die was needed for producing the tops. Simply place the gold to be stamped on a piece of lead a smooth surface could be easily obtained by a blow with a hammer. He recommended putting a heavy piece of tinfoil between the gold and the lead, which prevented any small particle of lead adhering to the gold and producing sweating during the subsequent stages of soldering. After swaging the top, the narrow flat margin might be utilized to hold it during soldering. Flush the top with 20-carat solder over a bench Bunsen. Having done this, touch the flat edge of the band with borax, place in the desired position on the flushed side of the top, return to the flame, when the top and band would soon unite most satisfactorily ; drop into the pickle while hot to remove borax. Trim off surplus with plate shears, then grind off overhanging edges to the required contour, polish same as a gold plate minus stoning down, and the cap would be ready for final adaptation. From experience it would be found that no special vent for surplus cement would be needed. He recommended Richmond's crown and Welch's crown cements as the best. It should be mixed so that it would drop from the spatula. In conclusion, he claimed that his method was the simplest, easiest, and most expeditious.

The PRESIDENT said they might now proceed to discuss Mr. Mitchell's paper, but, before doing so, he would call upon the Secretary to read a letter received from Mr. Morton Smale, bearing upon the subject. Mr. Smale regretted his enforced absence, and sent models of two typical cases of gold crowns which he had made some time previously, before the attention of the profession had been so much attracted to the question of gold crown work. He considered the method a valuable addition to their modes of procedure, and in the cases in which he had adopted it the work had lasted satisfactorily.

Mr. WALTER H. COFFIN said he would like to ask Mr. Mitchell, if, when having driven a soldered band firmly on to the root, he had any particular or special method of taking hold of it for removal, as he (Mr. Coffin) had found some difficulty in removing softish gold over a root without impairing its form.

Mr. HENRI WEISS said there was one point in the cases he had attended which had caused him some difficulty. In the method of adapting a collar to the outline of a root, it was recognised as necessary that it should fit accurately. It was also known that by taking a very small piece of gold, bleeding of the gums and pain was produced, and that the desired accuracy of fit was not obtained. His own method was to take a strip of gold at least two inches in length, and hold the two extreme ends in an ordinary pin-vice : a lap of gold was thus obtained which could be placed over the root and there held firmly. The lateral portions could then be burnished with a burnisher, and the crown could be forced up the root with the thumb. Having done this, he took a pair of fine pointed pliers and nipped the surplus. Afterwards he removed the excess with the scissors and soldered.

Dr. W. ST. GEORGE ELLIOTT reminded the members that some months previously he had the pleasure of bringing forward a plan for producing gold crowns, but his method was very different to that advocated by Mr. Mitchell. He might be pardoned if he had a preference for his own plan ; what Mr. Mitchell had said was, however, probably true. He (Mr. Mitchell), no doubt, could fit on a crown in half-an-hour or an hour, but it would probably take an ordinary operator three hours, and for that reason Dr. Elliott found he could not give the time. He always prepared roots as quickly as possible ; took an impression at once ; cast in Spence metal, which gave him, practically, a perfect model of the mouth that the workman

could work to closely. He then took the collar and tried it in the mouth ; placed the cap on the top, which had been swaged in a very different way from that described by Dr. Mitchell, then filled the cap with wax, and made a subsequent appointment with the patient for finally fixing.

Mr. WILLOUGHBY WEISS said there was one point which he thought Mr. Mitchell might draw special attention to, and, that was, the use of coin-gold. He, Mr. Weiss, had originally used pure gold, but found it too soft to stand the wear of constant mastication. There was one other small point ; he understood Mr. Mitchell that he filled in the crown with some base ; that, also, he considered an important point, because, at times, mastication was so great that it would wear away and dent in the crown. He had never adopted this plan ; if he had done so, he thought he would have avoided the denting of his crowns which had sometimes occurred. It was his practice to leave a hole in the centre of his crowns through which the excess of holding material was able to exude, and after the cap was well secured in its place, he then drilled out the opening and filled it in the same manner as an ordinary cavity.

Mr. DENNANT asked whether Mr. Mitchell had used any considerable variety of plastic cements, and had arrived at the conclusion that the two he recommended were the best as the result of his own experience. He also wished to know whether Mr. Mitchell had tried Flagg's plastic enamel. Mr. Dennant had not, himself, used Flagg's cement, but he had recently heard it spoken very favorably of.

Dr. GEORGE CUNNINGHAM was of opinion with regard to cements that it would be well if there could be some better description than merely the name of the maker. They ought to know whether it was a phosphate or an oxychloride cement—it was an interesting point. He thought, also, that Mr. Mitchell might have told them something as to the strength of white cements, contrasting phosphate with oxychloride. There was one objection to the all gold crown methods which had already been remarked upon, and that was its unsightliness on a first bicuspid. It might be a strong operation, but he (Dr. Cunningham) did not think it the highest form of operative work ; it was quite possible to add to it the natural effects of a porcelain tooth. He, himself, believed that the profession would soon have within its reach greater facilities for fixing bands, and avoiding, by Mr. Weiss's plan, bringing the solder

in front. Dr. Cunningham could see that the pin vice was a good suggestion, but he was informed that Dr. Bing, of Paris, did not solder the bands; by means of compressed air he melted the gold and brought the two ends together. This might be done with compressed air and ordinary gas, using the Knapp blow pipe, or, better still, oxyhydrogen gas. Referring to porcelain fronts, Dr. Cunningham said that his plan was to make a ring ferrule which would surround the tooth, for the contouring, and letting in the porcelain front to the gold band. The gold band being very narrow in front, was easily concealed by the gum, or showed very slightly—at any rate it was better than the all gold crown. For his own part he could not adjust articulation by means of the appliances which Mr. Mitchell had described. He preferred using a How's screw, and, if necessary, deflecting; then filling up with a full amount of amalgam on top, and, of course, that being high up it was possible to adjust absolutely. He thought this plan æsthetically was better than Mr. Mitchell's.

Mr. WALTER COFFIN remarked, with regard to Dr. Cunningham's porcelain fronts, a patient came to him with an entire gold crown exposed to view and said, "he would like a window made in front." Mr. Coffin succeeded in making the window. He first put in a little porcelain cement and then tried to fix in a porcelain front, but he regretted to say in the latter he was not successful, but he thought it could be done.

Mr. JAS. STOCKEN some little time back had had a case where he had the misfortune to break off a porcelain front—it was the first bicuspid. He countersunk the crown and accurately fitted a porcelain front to it which answered perfectly.

Mr. AMOS KIRBY had had some little experience with porcelain fronts. He formed a split ring round the tooth. He used platinum or dental alloy for his ferrule and post, and found that amalgam adhered well to all the parts.

Mr. BETTS said with regard to filling roots, he himself had a tooth filled with Portland cement, which had hitherto done well and had been in a year.

Mr. V. COTTERILL said that, at least nine years ago, he made some experiments with Portland cement for stopping at the back of the mouth. He found that several came out very quickly, but that was due, he discovered, from the way in which the cement was mixed. It must not be stirred up as was done in the case of all oxychloride cements.

Mr. BOYD WALLIS had used Portland cement for temporary fillings and found it answer remarkably well.

Mr. HENRI WEISS was under the impression that Dr. Mitchell's paper was upon the adaptation of gold crowns, but as the discussion had deviated somewhat from the line, he might mention that his experience with regard to porcelain fronts was that they never made a water-tight filling. After a time moisture would find its way in between the porcelain front and the gold collar.

Mr. L. MATHESON pointed out to Mr. H. Weiss that, if after the collar had been fitted a cap was made, he might then fit the crown on to that and no water would get in. The porcelain crown should be fitted to the collar and to the cap.

Mr. MITCHELL replying to the various questions said, with regard to irregular bands, sometimes it was found that there was considerable difficulty in fitting irregular bands, but it could be done very nicely; the band could be fitted on to a model out of the mouth, and with a pair of fine pointed pliers it could be adapted to any inequality of the gum. With regard to the method suggested by Dr. Elliott, there was no disadvantage in the method, it was only a little more expensive.

With regard to coin gold, he had found it the best thing. He started on pure gold, because it was easy to work, but it was just as easy to wear out. With regard to Mr. Weiss' question, he simply flushed the top with No. 1 solder, it was not necessary to use any with the band at all then. The reason he used No. 3 for the top was because it took the contouring of the crown better. In reply to Mr. Dennant with regard to cements, the reason he used Welch's and the Richmond was because they were much finer than other cements, they flowed more easily, and were in every respect better. They were oxyphosphates. With regard to Dr. Cunningham's questions he was quite right with two exceptions. In regard to first bicuspid, granting it was not æsthetic, there was no objection at all to using a porcelain front. With reference to soldering bands, there was no reason why Dr. Bing's method was not a very good one. There was one other point mentioned by Mr. Weiss as to the possibility of moisture: by making an entire solid cap any difficulty in the direction was disposed of.

STUDENTS' SOCIETY OF DENTAL HOSPITAL OF LONDON.

The last meeting of this Society was held on December 10th, Mr. W. HERN, M.R.C.S., L.D.S., in the chair.

Mr. HARSANT L.D.S., after the usual preliminaries read a paper on
FRACTURES OF THE JAWS AND THEIR TREATMENT.

The reader opened his paper by expressing the opinion, that it was the duty of all dental students to have a sound knowledge of this class of injury. He considered the dental surgeon to be the man best fitted for healing fractures of the jaw.

After mentioning the chief causes of fracture, he described the usual symptoms from which a diagnosis can be made.

Speaking of the time required for treatment, Mr. Harsant referred to the rapid change for the better in a patient after the application of a Hammond splint. However dilapidated the patient's appearance may be at the time of presenting himself for treatment, he will quickly regain his normal condition when the parts are firmly held in place and the power of mastication restored. The average time for a splint to be worn was six weeks.

Then followed a description of the various complications of fracture, such as necrosis, non-union, false joint, &c.

Passing on to the methods of treatment, the reader divided this subject into two : (1) Appliances made use of external to the mouth. (2) Those used inside the oral cavity. Of the first class were the different kinds of bandage ; a detailed description being given of the 4-tailed and Hamilton's bandage. Dr. Ward Cousins had lately introduced a form of bandage for which he claimed great advantages. Mr. Harsant, however, considered it greatly inferior to splints used inside the mouth. He strongly objected to the idea prevalent, especially among medical men, that the only treatment necessary was to put on a bandage, and said, that though a bandage was occasionally useful as an adjunct to a splint, it could in no way take its place. The different forms of splint used in the mouth were then described, with the method of making each. By far the best splint to use, if possible, was the Hammond. Silver, or tinned-iron wire, was the best material to use. The method of putting on a Hammond splint was then given, and the instruments designed for the purpose, by Mr. Newland Pedley, shown. The paper closed with a short description of the diagnosis and treatment of fractures of the upper jaw.

Mr. Harsant illustrated the various points referred to in his paper,

by shewing a series of models and splints kindly lent him by Mr. Pedley and Mr. Hern.

Mr. NEWLAND PEDLEY opened the discussion. He quite agreed with the views expressed in the paper, and wished to lay especial emphasis on the remark that fractures required more careful treatment than by simple bandaging.

The PRESIDENT commented on the paper, and he also showed models of cases which he had treated, and gave details of the treatment.

Mr. SEYMOUR mentioned the fact that in putting on a Hammond splint the wires should be tucked under in the same direction as they had been twisted up.

The discussion was continued by Messrs. Dolamore, Woolf, and others.

Mr. HARSANT then replied to the various speakers ; and a vote of thanks to him and to the gentlemen who brought forward casual communications, closed the proceedings.

NATIONAL DENTAL HOSPITAL.

A VERY successful smoking concert took place on November 28, at the old Hummums Hotel, Covent Garden, under the auspices of the Students' Society of the National Dental Hospital. The chair was taken by Dr. Maughan, who was supported by Mr. Sidney Spokes in the vice-chair. A varied and entertaining programme afforded much amusement to both the staff, students and friends of the institution, tending to cement that good feeling which ever exists between the teacher and his pupils.

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.

THE second concert of the season was held on Thursday, December 13th, at the Hummums Hotel, Covent Garden, F. Woodhouse Braine, Esq., occupying the chair.

A lengthy but nevertheless excellent programme was got through, the features of the evening decidedly being the conjuring entertainment given by Mr. Harris, the two clever recitations by Mr. G. Read—the comic songs of Mr. Paul, and last, but not least, the excellent rendering of a selection from *Trial by Fury* by members of the Musical Society, Mr. E. Lloyd Williams taking the part of judge, Mr. Barrett that of usher, and Mr. Wheatley that of defendant ; the latter gentleman also gave two solos, and sang a very pretty duet with Mr. E. Lloyd Williams.

The next concert will be held during the latter part of January, when the popular Dean of the hospital, Mr. Morton Smale will take the chair.

REVIEWS AND NOTICES.**A PRACTICAL TREATISE ON ARTIFICIAL CROWN AND BRIDGE WORK.**

By George Evans. Philadelphia: The S. S. White Dental Manufacturing Co. 1888.

THE rapid evolution of crown and bridge work has brought to light such a flood of mechanical ingenuity, and called forth such a variety of individual methods and processes, that it has been almost impossible for the dental practitioner to keep himself adequately posted up in all the latest details, and the difficulty has been largely enhanced by the fact that the literature of the subject has been scattered piecemeal over a large area. Mr. Evans has come to the rescue by offering to our notice a treatise which is a serious and honest effort to present the subject in a comprehensive form, which, while including a vast amount of information, is free from the common blemishes of padding and mere verbosity. The work is necessarily made up largely of compilations, and many of the methods are (as we think advisedly) described in the published accounts of the individual authors. There is thus not much scope for literary adornment; but the book is nevertheless pithily written and quite readable. The illustrations are literally profuse and well executed, and go far to render the description plain and interesting.

Part I. is devoted to an account of the preparatory treatment of teeth and roots for crown work. Part II. is taken up with an exhaustive description of artificial crown work, and includes full details of a host of methods for making porcelain crowns, gold crowns, and combinations of both. Part III. treats of bridge-work. This is a class of work which, for reasons which it is not our province to enquire into just now, has not received a large amount of approbation in this country; but it remains to be proved how far this objection may be overcome by adopting a system of detachable work in the direction of the moveable bridge of Mr. Gartrell, which was so much admired at the last meeting of the British Dental Association. Part IV. contains a short account of materials and minutiae of construction, such as plate and solders, porcelain teeth, casts and dies, soldering appliances and so forth.

We are all apt to slide into grooves of practice and become indifferent to, if not ignorant of, the procedure of others; and in order to counteract this baneful tendency to some extent, we would recommend our readers to peruse this practical treatise by Mr. George Evans.

A MANUAL OF NITROUS OXIDE ANÆSTHESIA (for the use of Students and General Practitioners). By J. FREDK. W. SILK, M.D.Lond. London: J. & A. Churchill. 1888.

THIS is a handbook which will be welcomed by students and practitioners, especially dental surgeons, as comprehensive without being prolix. The author has succeeded in giving a very readable account of all that pertains to the administration of nitrous oxide in clear and simple language. The illustrations are fairly numerous, and, although some of them are old friends, serve the purposes of the text; the type is good, and the general "get up" all that can be desired.

After treating of the properties, preparation and history of "the gas," Dr. Silk goes on to treat of its physiological and pathological aspects, and lays other authors freely under contribution, notably Dr. Dudley Buxton in his excellent communications to the Odontological Society. The mode of action having been considered, the practical point of apparatus is gone into. The rule laid down that mouth-props "should be provided and fitted into place by the *operator*, but the *administrator* is frequently called upon to do this; he should therefore be provided with one or two pairs," is somewhat novel and involved. We have always understood that the administrator was expected to supply props; but whoever has the duty to perform should certainly be armed with more than "one or two pairs," otherwise he is likely to get into trouble without waiting very long. Although cleanliness cannot be insisted on too freely, we have never yet met with an anæsthetist who indulged in the luxury of new prop-strings for "every fresh patient;" but the golden era may yet dawn. We think that a "gas quieter" is very desirable, although the author does not advocate its use. The advice given that the administrator's duties do not cease with the removal of the face-piece is not superfluous, as he can render the dental operator a great deal of assistance if he is only on the look out. The remaining chapters treat of variations of procedure and minor difficulties; after effects and special cases; dangers, and how to combat them; and the use of nitrous oxide in general surgery. Dr. Silk dismisses the subject of the combination of nitrous oxide and ether with scant notice; probably he dislikes the method, but we think that the subject claims larger treatment, from the fact that many dental surgeons favour the mixture in long operations.

The book is a distinct gain to dental literature, and will, no doubt, become popular.

THE DENTAL RECORD. LONDON: JAN. 1, 1889.

DENTAL JOURNALISM.

THE literature of a profession is indissolubly connected with its true advancement and evolution. This must be so of necessity; for where true science exists there also will be found that ever-widening band of light which seeks to shed its rays, in various directions, upon all who cross its path. The medium of letters is almost as ancient as that of language itself, and, throughout all time, has run concurrently with the development of all that is best in civilization. In general literature, journalism holds a secondary position, as regards intrinsic merit, from the fact that what is necessarily put together in haste cannot live in the minds of men—it is hurriedly written, hurriedly read, and hurriedly forgotten. This truism, which has been recently uttered in other but similar words by no less an authority than Liddon, does not apply, with equal force, to the journalism of practical science, for here the conditions presented are entirely different, and whatever a journal of this description may lack in purely literary merit, it yet serves an admirable purpose if it succeeds in binding together the units of a profession, and building up that practical superstructure of knowledge which benefits so richly from a free interchange of thought and opinion.

In the field of dental literature much good work has been done; yet we cannot honestly say that we are rich in this respect, and there is surely much ground yet to be covered. With regard to dental journalism, we cannot boast of the number of journals which flourish on the other side of the Atlantic, but it is just possible that the three organs that exist in Great Britain would, if properly managed, be amply sufficient to supply the needs of a profession which is neither very numerous nor intensely literary. We dentists are eminently practical people, and we want our journals, whether numerous or few, to be at least sound in character

and useful in scope : if they do not fulfil these requirements, the fewer the better. But we must not forget that, in order to make our journals efficient, much help is required from the members of our profession, from the very fact that we are few in number. Each *individual member* should recognize his own responsibility, and be more ready to lend a helping hand than to pose as an apostle of cold criticism. Healthy criticism is always beneficial, but it should have the true ring about it, and savour more of friendliness than of ferocity. We recognise with sincere pleasure the growing tendency of dental surgeons, in all parts of the world, to give each other a helping hand in professional matters, by banishing all secret systems and that later development of them, which *patents* for its own glorification and emolument what it ought to offer in modest generosity for the benefit of all. If we are a part of the honourable profession of medicine, let us rise to the liberal principles upon which that ancient calling has been built up from time immemorial. We welcome the substantial assistance which the foundation of such bodies as the Odontological Society of Great Britain, the British Dental Association, and others, have rendered to the cause of dental unity and advancement in this country, but we hold that dental journalism should hold a position not inferior to theirs in helping on the good cause. It has doubtless done much ; our heart-felt wish is that it may do more.

We would gladly leave the matter here without any reference to ourselves, but the circumstances under which we send forth this number to our readers call for, at least, a word of explanation. The new volume of the DENTAL RECORD, which we inaugurate to-day, is new in more respects than one. The late Editor, who piloted the journal safely for so many years, has left us rather suddenly for another sphere of life, which we trust will be useful and congenial ; he carries with him to his new home the good wishes of all who appreciated his fearless integrity and hard-working qualities, and who still hope that his connection with the RECORD may not be altogether severed.

The present Editor is therefore new—both to his readers and his work, and would claim a large share of indulgence in attempting to overcome the difficulties which must necessarily attend a period of transition. We are much encouraged by help already received, and by promises of assistance from professional brethren in all parts of the country; we give elsewhere a list of contributors, whose names alone are an assurance that our journal will not be altogether void of interest. We have made an entire re-arrangement of the subject matter of our pages, and intend giving prominence to several new features; and, finally, we have attempted to brush up our “outer covering,” not without some misgiving, lest some of our readers should run away with the idea that “the tailor makes the man.”

In conclusion, we would assure our readers that if our efforts be a failure, they will be due to lack of ability rather than to honesty of purpose. We have set ourselves the task of upholding at all times the cause of dental education and the thorough training of the dental licentiate; of fostering good conscientious work; and of maintaining that high standard of professional ethics, by which alone we may deserve well of those with whom we are brought in contact. Should the DENTAL RECORD succeed, in some slight degree, in helping along the principles enunciated, its mission will have been fulfilled and its work not altogether in vain.

**Dental
Examina-
tions.**

An article on the subject of examinations appeared in the last number of our contemporary, the “Journal of the British Dental Association,” which bids fair to raise a question which cannot fail to be of interest. The writer, after calling attention to the evils of “cramming,” and its encouragement by the system of splitting up the subjects into easy stages by the conjoint Board of the Colleges of Physicians and Surgeons, passes on to consider the examinations for the L.D.S., and deplures any attempt to make a division of the present examination. We hardly think that this view is shared by any considerable portion of the profession; on the contrary, we are of opinion that the “time is ripe” for considering the whole question,

and amending the examination in several important points. It has always been held that medical education consists of two principal phases—the groundwork, and the subsequent acquirement of practical and manipulative detail. It is true that the principles of the former are included in the latter, but the medical student has never been required by any board of examiners, as far as we are aware, to take up each and every subject in one examination. Why should the dental student be required to jumble up general anatomy and physiology, dental anatomy and physiology, dental surgery and dental mechanics, with a smattering of surgery and medicine, all together in one examination? We are strongly of opinion that the work should be divided, and that the subjects of practical physiology, elementary chemistry, and dental materia medica should be added, while dental mechanics (not in theory only) should take a prominent place. We are probably all agreed that the practical portion of the examination should be still further developed, for this is undoubtedly the best way of ensuring the competence of our young practitioners.

Copper Amalgams. Dr. St. George Elliott made a communication to the Odontological Society at its last meeting (a full report of which appears elsewhere) on the behaviour of copper amalgams, which has a tendency to shake the faith which exists so largely as to the efficiency of this material as a filling. Dr. Elliott is accustomed to conduct his enquiries with accuracy, and on this account alone his conclusions should be received with respectful consideration. But we do not believe that our faith in “Sullivan” can be altogether demolished by tests out of the mouth, however scientific, as opposed to our practical experience of its value in daily practice. Experiments may prove erroneous by means of their very complicated niceties; and we must ever remember that the varying conditions of the mouth cannot be even approximately estimated in laboratory tests. Dr. Elliott gave us some time ago a very careful and elaborate table of tests in connection with a host of amalgams then in the market; we ourselves selected one for practical trial which had theoretically promised well, but our sad experience—both to ourselves and patients—was that it was the *very poorest tooth-saving amalgam* which we had ever tried. We believe that a series of copper stoppings placed in test cavities *in the mouth* alongside another series of ordinary amalgams, and left in for a year, would

prove to practical demonstration that the former were comparatively free from shrinkage—at least to naked eye appearances—and incomparably more valuable as essentially tooth-saving. It must not be inferred from our remarks that we favour the wholesale employment of Sullivan's stopping, for we are well aware that there are circumstances which may preclude its employment, and which we cannot discuss at the present moment ; but we hope, at the same time, that the very valuable experiments already noted will not prejudice us against a filling which has proved an inestimable boon.

NEW INVENTIONS, APPLIANCES AND REMEDIES.

We invite *all manufacturers* to send us anything useful and novel, which we shall be pleased to report upon.

A NEW WORKROOM BURNER.

We have received from Messrs. Thos. Fletcher & Co., of Warrington, their new standard burner (No. 10) for workroom purposes. This is one of the most useful burners which we have ever used. The range of temperature is ample—from a gentle heat for drying investments for soldering, up to a strong flame for boiling purposes, and the flame does not light back, however low it may be turned. The stand for flasks, kettle, &c., is very ingenious, as it will support a round-bottomed glass flask, and is a curiosity from the fact of its being cast in one piece. A sand bath can be supplied to fit the stand, and makes a capital medium for warming an ordinary plate with rubber on for packing. We are more than pleased with the burner, and can strongly recommend it to our readers.

THE COMPANY'S NEW CHAIR.

This is a chair which has been invented and is being manufactured by the Dental Manufacturing Company. The invention consists of a method of raising and tilting, rather than in any new departure in construction of the body of the chair, and is at present applied only to the well-known iron Morrison chair. The mechanism of raising is an adaptation of the pump and ram method ; the motion is governed by a pedal lever, which by an ingenious arrangement can be worked from the side of the chair as well as from behind ; each stroke of the pump lifts the chair noiselessly

but effectively, and the lowering is completely governed by a valve lever. The tilting is effected by a lever, which is worked one way for swinging forwards and another for the backward movement. The great advantage, and one which we think will be eventually recognised, is that the pump *does not interfere with the full range of the Morrison chair*. This is effected without any cutting of floors or ceilings, and the pump can be *adapted to existing chairs* by any intelligent mechanic. The advantages of the Morrison chair are so obvious that it is unnecessary to remark that its use has been very largely adopted all over the world. Its range is absolutely the best that exists in connection with any chair, and admits of the operator sitting at his work in the majority of cases ; it is adapted to both small and bulky patients ; and is not repulsive as an article of dental furniture. The one drawback has been the want of suitable lifting power ; now that this has been provided by a method as efficient as it is ingenious, we have no doubt that its value will be largely appreciated by a vast number of operators who have felt the want of what is now within their reach.

PYRODINE.

This is a new antipyretic received from Messrs. Levinstein, of Manchester. It is put up in tabloids containing four grains each, and is said to be as effective as antipyrin, whilst the dose is smaller. A note of warning, however, is given in the *British Medical Journal*, in which the writer asserts that the drug should be given with caution, as its toxic effects are apt to prove troublesome.

STANLEY AS A DENTIST.

AT a moment when the anxious attention of the whole civilised world is fixed on that part of Africa which so mysteriously hides the fate of one of the greatest pioneers of modern times, the following anecdote of the lost hero, since it immediately concerns our profession, may be found interesting.

During the period of Stanley's sojourn in Brussels, and where at that time I was practising, I had the honour of being consulted professionally by the great explorer. Stanley, who as a rule is very reticent, would occasionally give me a few word pictures of life in the centre of the Dark Continent. The rapt attention with which

I listened to every word which fell from the great man's lips can well be imagined. Among other things he told me that he also was a dentist, but that his practice extended only to the extraction of teeth. A set of forceps always formed part of his baggage. The extraction of a tooth was a great event in a native village, the inhabitants turning out and assembling in large numbers in front of the tent of the wonderful white medicine man, to witness what to them was almost a miracle. Stanley, who knew the value of "effect" upon the natives, and the advantage to be gained by impressing them with the greatness of the white man, encouraged this curiosity, and with laudable intention gave himself a certain amount of airs, which increased the solemn gravity of the situation. The critical moment arrived, the chattering of the negroes would cease, and the rolling white eyes would be concentrated on the movements of the operator and on the victim. The operation over, the offending member would be eagerly examined amid much gesticulation and delighted exclamations of astonishment.

"I suppose," said I, "that your patient was usually grateful, and that his gratitude took some tangible form?"

"No." replied Stanley, slowly; "not often. They have nothing to bring. A young fowl, some bananas, or a few edible roots they sometimes brought me; but they are very poor."

Thereupon the conversation would cease, and that far-away look, as of a man accustomed to contemplate the grandeurs of nature, would come into his eyes. His mind was evidently far distant. He was in a reverie, which even the whirring of the burring engine or the percussions of the automatic mallet did not seem to disturb.

EDWARD AYTON, L.D.S.

GOSSIP.

AN International Dental Congress is to be held in Paris, during the month of August, 1889, under the auspices of the Dental Societies of France. A cordial invitation is extended to all practitioners both at home and abroad. A subscription of twenty francs will be expected from dentists practising in France, but we understand that all visitors from other countries will be welcomed *without* subscription.

A PATIENT once applied to his dentist in a small seaside town for advice under the following circumstances. He was walking the

previous evening in the street when his vulcanite suction upper was launched into the darkness during a fit of "coughing" (probably *post-prandial*, though this little bit of explanation was not vouchsafed). After groping about for some time his search was partially rewarded by the recovery of *half* of the errant denture. The dentist advised that the services of the *town-crier* should be requisitioned, and a suitable reward offered. This was done, much to the amusement of the townspeople and the subsequent edification of the patient. The missing half loomed up out of its temporary obscurity, was joyfully wedded to its mate in the vulcanizer, and lived happily ever afterwards—from an oval point of view.

THE following epitaph was noticed over the grave of one of our deceased brother dentists :

"View this grave-stone with all gravity,
I—— is filling his last cavity."

Archives of Dentistry.

It is not generally known that *Cajaput Oil* is a good solvent of gutta-percha ; it has, however, some disadvantages which may be overcome by using the following formula, which will be found very useful :—

Cajaput Oil
Chloroform $\bar{a} \bar{a}$
Gutta-percha, q. s.

This will be found effective for lining cavities and smearing root canals previous to packing with gutta-percha.

MESSRS. KELLY are preparing a new Medical Directory for London, which is to include a list of Licentiates in Dental Surgery. Although the time-honoured Medical Directory, published by Messrs. Churchill, covers the ground, we think that a list for the metropolis alone will be found very useful, and we trust that all dentists will fill in the forms sent out, so that the dental portion may be complete in every way.

DR. MCGUIRE absconded, and, it will be remembered, did not appear at his adjourned trial. In the interval he changed the scene of his labours to Carlisle, rented a house in Brunswick Street, next

door to Mr. Jones, dentist, and close to Portland Square, and on the fanlight of this house had gilded the words "Mr. McGuire, dental surgeon." He had also published an advertisement announcing himself to be "late dentist to the King and Queen of Netherlands, Holland." The arrival of an Aberdeen constable, however, cut short his brilliant career in Carlisle, and last week he was conveyed to Aberdeen, where leisure is now given him to reflect on the sports and pastimes of an ex-royal dentist. Probably, when this spell of leisure is over, he may have an opportunity for cogitating on the intricacies of the Dentists' Act, as his name does not appear in the Dentists' Register.—*Chemist and Druggist*.

MR. MAPLESON, in his interesting "Memoirs," gives an amusing account of a somewhat "stimulating" prescription which was dispensed for him at Topeka, where he had stopped with his opera company to give a performance. He writes:—"We had exhausted our stock of wines in the train, and the artists on entering the hotel near the theatre, where it was proposed to dine, were surprised and annoyed at having water placed before them, the baritone (De Anna) vowing, with a knife in his hand, that unless he could have a more stimulating beverage he would refuse to play the 'Count de Luna' that evening. Inquiry was made high and low, but there was not a drop of wine or spirits of any kind officially known to be in the town. Going along the street on my return to the hotel, I met a gentleman with whom I was acquainted, and through his kindness I was able to obtain from a medical practitioner a prescription. It was in the Latin language, and the chemist evidently understood its meaning. There was no question of making it up. He simply handed me three bottles of very good hock."

ONE of the enigmas which the authorities of dental hospitals have some difficulty in solving is to recommend the new student an outfit of instruments which shall be efficient for all purposes, avoiding the extremes of meagreness and superfluity. In the "good old days," each student bought his "kit" according to his own sweet will, and his own ignorance was often augmented by gratuitous advice from a "knowing" fellow student. Of late years matters have mended, and we are pleased to note that just recently

the Medical Committee of the Dental Hospital of London have considered the matter of sufficient importance to appoint a sub-committee to carefully consider the students' wants. The labours of these gentlemen are now at an end, and the dental world will no doubt look forward with some curiosity to what will be expected to rank as the "classical outfit" for the young dental surgeon. There is certainly safety in numbers in undertaking a task of this kind, as there is less liability of individual predilection being present to an unreasonable limit ; but after all said and done, the student must eventually—after mature experience—strike out a line for himself, which will suffer nothing in robustness from having been assisted at first.

THE latest pathological theory with regard to the union of an implanted tooth with its artificial socket was promulgated at a recent meeting of an American Dental Society, where one of the members expressed his conviction that the union was one of "bony ankylosis !" It is needless to say that no histological specimens were produced. At the same meeting another ingenious member announced that he was experimenting with the implantation of "porcelain" teeth. We shall soon hear of full dentures being "screwed in," the ideal for ages past of an ignorant public.

THE *Scotsman* thus describes some of the dental freaks of "Sequah" : A sound of music is heard, and a chariot with a band—the players wearing a large grey cowboy hat—drives into the market. We are admiring the "cattle" when a small trap appears, in which is seated "Sequah," attired in a sealskin coat, with a hat similar to the band. The crowd serge round the car, which is drawn up under the sounding-board by the clock. Boxes are unstrapped, and no time is lost before business is commenced. "Sequah" takes off his sealskin and discloses underneath an elaborately embroidered and fringed, though rather dirty, buckskin robe, and in this he plays the *rôle* of the showman. There is first, it is announced, to be half-an-hour of tooth-drawing, and judging from the rush made, one would think that half the people in the market had suddenly been seized with a desire to get rid of an offending ivory. But provision is made against overcrowding. A stalwart assistant stands on the steps, and only one can pass up at a time. A heterogeneous

crowd it is which gets its teeth pulled out. Young men and maidens, old men and women, and small children press eagerly forward to occupy the enchanted chair. "Sequah" seems to have a large selection of dental instruments, and his "search light" is an ingenious and efficient apparatus. This consists of a small electric bull's-eye, which he affixes to his forehead, and the wires of which pass loosely over his shoulders to a battery. When the mouth of the patient is opened, the light shines into it, and the dentist, unimpeded, performs his work with more celerity than care. All the time the teeth extracting goes on the band plays lively airs, so that any screaming or shouting—of which, however, there is very little—by the victims is not heard.

THE Govenors of Guy's Hospital have decided to open a complete Dental School as an extension of the Dental Department, and on another page an advertisement appears inviting applications for six Assistant Dental Surgeons to Guy's Hospital, Lecturers on Dental Anatomy, Dental Mechanics, &c., &c. Two of the Lectureships are already filled. The Dental Surgeon to the Hospital will lecture on Dental Surgery, and Mr. Groves, F.R.S., will undertake the lectures on Dental Metallurgy. The extension of the Dental Department is intended to enable out-patients to receive remedial treatment instead of the extraction of their teeth. At the same time, opportunity is afforded to Dental Students to obtain their complete professional education in a great hospital, where Dental Surgery will be taught and practised in the same way as the other specialties of medicine.

ANNOUNCEMENTS.

THE Annual General Meeting of the Odontological Society of Great Britain will be held on Monday, January 14th, 1889. *Agenda* :—Election of officers and council for ensuing year ; reception of reports from treasurer, librarian and curator. *Casual Communications* :—By W. Hern, M.R.C.S., L.D.S. ; Boyd Wallis, L.D.S.Eng. ; A. Hayman, L.D.S.Eng. ; and E. Lloyd Williams.

THE next meeting of the Students' Society of the Dental Hospital of London will be held on Monday, January 21st, 1889, when the office-bearers for the year will be elected, and Mr. W. H. Dolamore, L.D.S.Eng., will read a paper on "Dental Abscess."

APPOINTMENTS.

LJNNELL, PERCY A., L.D.S.Eng., to be House Surgeon to the Victoria Dental Hospital, Manchester.

SPOKES, SYDNEY, M.R.C.S. and L.D.S.Edin., and GLASSINGTON, CHARLES W., M.R.C.S. and L.D.S.Edin., to be Medical Tutors to the National Dental College.

READ, T. G., D.M.D.Harv. Univ., L.D.S.Eng., to be Assistant Dental Surgeon to the National Dental Hospital.

READ, HENRY G., M.R.C.S., L.R.C.P.Lond., L.S.A., L.D.S.Eng. to be Dental Surgeon to the National Dental Hospital, vice Thomas Gaddes, resigned.

FORSHAW, C. J., D.D.S., LL.D. (Tenn.), to be Honorary Dental Surgeon to the Bradford Tradesmen's Home.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from November 1st to November 30th, 1888 :—

					London.	National	Victoria.
Number of Patients attended					—	3011	1191
Extractions	Children under 14	...	...	...	428	313	926
	Adults ... ..	...	...	...	1,061	481	
	Under Nitrous Oxide	...	...	...	1,009	790	101
Gold Stoppings	...	...	...	...	419	124	30
Other Stoppings...	...	...	...	...	1,030	718	162
Advice ... ..	...	...	...	...	157	852	—
Irregularities of the Teeth	...	...	...	...	156	99	—
Miscellaneous and Dressings	...	...	...	...	471	175	367
Total					4,731	3,552	1,586

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the DENTAL RECORD.

SIR,—I beg to draw attention to the fact that the crown described by Mr. F. Chasemore in your last number is a well-known one in the Dental Department of the Harvard University.

I have latterly been applying for incisors and canines what I believe to be a new form of crown. Make a cap as for a Richmond crown, only leave the pin long on the occluding surface; now bind this pin to the required angle and fit a tube tooth to the cap and fix with sulphur.

Faithfully yours,

F. G. READ.

31, Cavendish Square,

December 12th, 1888.

THE DENTAL DIPLOMA.

To the Editor of the DENTAL RECORD.

SIR,—In a leading article in the *Journal of the British Dental Association* the following paragraph occurs:—"It has been at times proposed to divide up the dental examination into two portions * * * but the time seems hardly ripe for such a change at present."

If the opinion of the profession at large could be expressed on this subject, it would be valuable. I am one of those who believe that the examinations should be divided, the first part to consist of anatomy and physiology, the second part of dentistry and surgery. Indeed, I could go further and say that it is desirable the dental student should have to run in all respects on the same lines as the "medicals," until both have passed the first and second professional examinations; then the medicals to proceed to take medicine, midwifery, surgery, the M.R.C.S., L.R.C.P.; the "dentals" dentistry, surgery, and the L.D.S.

Your obedient servant,

H.

December 21st, 1888.

A NOVEL (?) FILLING.

To the Editor of the DENTAL RECORD.

SIR,—On page 538 of this month's DENTAL RECORD you publish a paragraph with reference to Dr. Tileston's novel (?) method of combining two plastic stoppings, and invite your readers to acquaint you with the result of their trials. Now, if you will refer to page 118 in the February number of the *British Journal of Dental Science*, 1888, you will find that I had been employing that process for a long while even previous to that date, so that had Dr. Tileston read that journal he would have seen that there was nothing original in the method he now advocates, unless indeed such typographical errors as *coating* for "cavity," *ingenuous* for "ingenious," &c., fogged him beyond comprehension. Though, in the article to which I referred you, I had mentioned oxychlorides only, yet I had already then, and have continually since, used either the oxychloride or phosphate, whichever is most handy at the time.

Yours faithfully,

FRED. A. BELLAMY.

Mona Lodge, Streatham, S.W.

December 19th, 1888.

LETTERS, NOTES, AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and *Answers* are invited on all subjects of interest, either surgical, mechanical, or ethical.

QUERIES.

L.D.S. ENG. would be glad to know of a reliable application for after-pain of extraction, and a good mouth-wash for treating sloughing surfaces after difficult extractions.

APPRENTICE would like to know the best method of cleaning hands after casting and other dirty work in the workroom.

ANSWERS.

MODELLING COMPOSITION.—In reply to the query of L.D.S.I. in the December number, the best impression compound I am acquainted with is the one mentioned by Mr. R. King in a paper read before the Midland Branch of the British Dental Association about four years ago. It is free from both “harshness and springiness.”

Stearine	..	..	..	..	..	$\frac{1}{2}$ lb.
Gum Kowie, best quality only	..	..	..	..	..	1,,
Powdered French Chalk	..	..	..	..	..	$1\frac{3}{4}$,,

Melt a little of the stearine in an enamelled iron pan (10 inches by 2 inches deep), then add the gum kowie having first broken it up in a mortar to facilitate melting. Stir it constantly with an iron spoon or it will burn at the bottom, then add the remainder of the stearine and when melted add the chalk gradually, stirring it well in, and when thoroughly mixed pour out on to a soaped dish, and as it gets cold enough to handle roll it into thin sheets with a rolling pin on a wet board. The best way to soften it for use is in a jar in a water bath like a glue pot. When it is in the impression tray, warm the surface over a spirit lamp just before placing in the mouth, and don't be in a hurry to remove from the mouth and it will give a very sharp and correct impression.—W. E. H.

POROSITY OF RUBBER.—In reply to query on above, I have never had porous rubber to deal with, nor have I ever seen it except when vulcanising has been done with dry heat, or with deficient steam pressure, and in these cases it was probably caused by overheating and decomposition, or by air worked into the rubber during manufacture of the rubber, and which would expand with the heat. In actual practice I never met with porous rubber, and can only suppose that its existence is caused by carelessness in manufacture.—THOS. FLETCHER, Warrington.

The EDITOR begs to announce that the following are amongst the Contributors to VOL. IX. :

J. BLAND SUTTON, F.R.C.S.

W. A. MAGGS, M.R.C.S., L.R.C.P., L.D.S.

WOODHOUSE BRAINE, F.R.C.S

C. J. BOYD WALLIS, L.D.S.Eng.

W. SCOTT THOMSON, M.R.C.S., L.D.S

MORTON SMALE, M.R.C.S., L.D.S.

F. HENRI WEISS, L.D.S.Eng.

W. E. HARDING, L.D.S.Eng.

FRANK HUXLEY, M.R.C.S., L.D.S.

REES PRICE, L.D.S.Eng.

J. J. ANDREW, L.D.S.Eng.

G. G. CAMPION, L.D.S.Eng.

ROBERT JONES, M.D., B.S.Lond., F.R.C.S

A. GABELL, L.D.S.I.

J. S. AMOORE, L.D.S.Eng.

F. H. BALKWILL, L.D.S.Eng.

DAVID HEPBURN, L.D.S.Eng.

C. F. RILOT, M.R.C.S., L.R.C.P, L.D.S.

J. F. COLYER, L.D.S.Eng.

F. NEWLAND PEDLEY, F.R.C.S., L.D.S.Eng.



[It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 2.

Original Communications.

ON COPPER AMALGAM.

By C. J. BOYD WALLIS, L.D.S.Eng.

At the December meeting of the Odontological Society, Dr. St. George Elliott's interesting communication on copper amalgams drew forth one or two questions to which I did not hear a reply, and as the question of amalgams generally is at the present time attracting a great deal of attention, I thought a few brief notes on copper amalgams might be of interest.

I think anyone who has systematically tested the tooth-saving properties of copper must be convinced of its value for dental purposes. Personally, I think so highly of it that I often regret that its rapid discolouration prevents one employing it in filling many of the soft fragile front teeth with which one frequently meets, yet this defect of discolouration is what renders it compatible with tooth bone, and so applicable to pulps and sensitive dentine, which become very tolerant of the contact of this particular metallic compound. Pulps maintain their vitality under copper amalgams longer than under amalgams without copper. The pulp may die, but it does not so readily decompose, and in many cases decomposition does not take place, owing to the pulp becoming so charged with the antiseptic cupric salts.

One question asked of Dr. Elliott referred to the difference existing between the amalgams produced from the iron and zinc precipitated copper. The difference practically is much greater than appears on the surface, although, strictly speaking, when carefully prepared from pure materials, they should be, chemically speaking, precipitated copper and nothing more. But I suspect the difference which does exist is due to the impurities—the presence of traces of iron in the one case and zinc in the other. The iron precipitate makes a much harder, more durable, quicker setting and lighter

coloured amalgam, which oxidizes more slowly than the zinc precipitate. These qualities may prove an advantage or the contrary, according to the cases to which they are applied. In soft fragile teeth, or teeth in which the dentine is highly sensitive, a quickly oxidizing amalgam is required, and therefore in such cases zinc precipitated copper amalgam should be used. This may be capped with the iron precipitate, or with a higher grade amalgam as desired. Care should be exercised in the choice of a high-class alloy for capping copper amalgams, because some of those which are in the market do not harden well when so superposed, particularly if the copper amalgam be packed in quantity and with mercury in excess, instead of merely as a thin lining to the cavity. Such care is particularly necessary in contour fillings of the upper teeth, because the mercury in the copper amalgam will gravitate through the superposed filling and prevent some amalgams from attaining the necessary degree of hardness. Again, it is necessary to be careful in packing high grade amalgams over copper, and to obtain a good holdfast, for as they harden so much more rapidly than the copper they are very liable to be bitten off or otherwise misplaced from the latter whilst it is still in a soft condition, for the copper amalgam does not attain its maximum degree of hardness for days and, owing to this difference in the hardening qualities of the two amalgams, no direct union, such as occurs when two amalgams of the same grade are used, takes place; and owing to this want of union there is no objection to the copper amalgam being packed and allowed to harden before the superior amalgam is added; indeed, where the question of colour is a consideration, this latter method is the better to adopt. Dr. Elliott showed us that the generally received opinion that copper amalgams do not contract was a fallacy. I think anyone who has carefully examined a copper amalgam *in situ* of some months old must be convinced of this. I should like to meet with the amalgam which was unalterable under the variations of temperature, but at the same time, I think copper is the one amalgam with which contraction is of little or no consequence; indeed, I am inclined to think that it is a distinct advantage in the case of very soft and sensitive teeth, provided that the contraction is what I have generally found it to be, merely microscopical, because the chief virtues of the copper lie in its formation of an oxide or a sulphide or both, for both are excellent and durable antiseptics which are readily absorbed by the surrounding dentine and which thereby

becomes so perfectly protected from the further progress of decay, for a considerable amount of induration also follows this absorption.

Antiseptic re-agents for the treatment of the teeth must be something more than a bactericide ; it is not sufficient for our purpose to simply kill the organism, our antiseptics must also be capable of oxidizing and destroying the active or toxic principles which have been produced by the micro-organisms, and copper forms one of our most valuable agents for this purpose. Perchloride of mercury is perhaps the most powerful antiseptic we employ, but, unfortunately, it has no oxidizing properties ; it does not destroy the poisons produced in putrefaction, therefore, I should certainly place it after copper in value as a permanent filling or dressing in nerve canals. When ordinary antiseptics in use amongst us are employed, a percentage of peroxide of hydrogen should be added, as it supplies sufficient free oxygen to destroy the poisons produced in fermentation. I have just touched upon the question of antisepticity only in relation to copper, and as I may have another opportunity of saying something on dental antiseptics, I will only just refer to another chemical which I employ in conjunction with copper, and to which I drew attention in the *Lancet* and DENTAL RECORD (April, 1886), before it was generally on the market. I allude to β naphthol, a derivative of coal-tar. I employ the pure and resublimed β naphthol which is in white shining laminar crystals ; it is soluble in ether, alcohol, chloroform, and benzol, and I find it is very soluble in ozonic ether. It is a powerful antiseptic and germicide, and a perfect deodorant ; its durable antiseptic properties render it valuable as a permanent dressing in nerve canals. The formula I now employ is as follows :—R. β . naphthol $\bar{3}$ iv, iodol $\bar{3}$ ij, acid. carbolic pur. $\bar{3}$ vj, menthol $\bar{3}$ ij, eugenol $\bar{3}$ ij, ozonic ether $\bar{3}$ j, chloroform ad. $\bar{3}$ iij.

Copper may undergo several changes in the mouth ; it is acted upon by most of the acids either in the strong or diluted form, or in a hot or cold state ; it is also oxidized by alkaline and saline solutions exposed to the air, and has a strong affinity for sulphur, simple trituration of the two in a finely divided state being sufficient to effect their combination. Strong or diluted sulphuric acid does not attack copper at ordinary temperatures, but on applying heat sulphurous anhydride is evolved and sulphate of copper is produced, but a portion of the sulphuric acid suffers more complete decomposition, sulphur being deposited, part of which remains in the free state,

while the rest unites with the copper as sulphide. Therefore, when one considers the variety of products passing into and through the mouth, and the great changes and decompositions which take place in the oral cavity, one may well understand the changes which may and do in some mouths affect copper amalgams. It will have been noticed by those who use them that, when unprotected by a superior amalgam, copper amalgams gradually disappear, and by decomposition rather than by attrition, hence the importance of protecting them with a covering of a higher grade amalgam. Although I consider the zinc precipitated copper amalgam the easiest of all fillings to pack into root canals, as it certainly is the best, one occasionally meets with curved or small canals up which it is difficult to get even a liquid. For such I have found to be excellent a compound of the following :—

β Naphthol	...	...	...	parts xx.
Carbolic acid	...	...	...	„ x.
Ozonic ether	...	...	...	„ xv.
Zinc precipitated copper	...	...	...	„ xx.
Lanolin	...	...	...	„ xxxv.

This is more easily forced up a root canal than any other filling, it is perfect as an antiseptic, and may safely be used as a permanent root filling; the lanolin is absorbed and the copper oxidizes, the other antiseptics keeping the canal healthy meantime. Ozonic Ether is ether containing in solution peroxide of hydrogen of 30 volumes strength. Its properties are similar to peroxide of hydrogen, but has the advantage of being more stable. It is a disinfectant and deodorant, and may be used as a mouth wash or gargle.

Copper amalgam, again, comes in as a valuable agent in pivoting otherwise almost hopelessly decayed roots. One case will suffice to show what I mean. Some two years ago a lady wished me to pivot a tooth on to an upper central root that was so far decayed as to be almost beyond repair. I told her that the root was in such a condition that I would only pivot it as an experiment. I, therefore, prepared the root as far as it would allow, filled it with zinc precipitated copper amalgam, then inserted up the centre of the filling an iron instrument the size of a pivot pin, twisted it round a few times and withdrew it, then gently and loosely filled the hole with cotton wool dipped in a solution of gutta percha, and sent my patient away for two days to allow the amalgam to set. I then shaped the amalgam filling as I desired and pivoted in the usual way. The pivot is still

doing good service, or it was when I last saw my patient some two or three months ago.

There are several methods for obtaining copper for amalgamation, the best known being that of precipitation from a solution of sulphate of copper, using sheet iron in the one case and sheet zinc in the other as the precipitating medium. The first portion precipitated by zinc is largely impregnated with that metal and should be discarded. Fifty-six parts of iron precipitate 65 parts of copper. The precipitate should then be boiled with dilute sulphuric acid, washed thoroughly in water and pressed between blotting paper, and dried in hot air, or in a warm retort through which a stream of hydrogen is passed. Copper may also be precipitated from the pure metal by electrolysis, then rolled out and filed up for amalgamation.

To effect amalgamation heat should be employed and the metal well triturated with the mercury; the addition of mercurous nitrate or sulphate facilitates the process, as does also the addition of 1 per cent. of metallic sodium to the mercury.

Copper immersed in a solution of nitrate of mercury deposits the latter and forms an amalgam; also by electrolysis a solution of cupric sulphate into a cathode of mercury a similar alloy is formed.

CASE OF ARTIFICIAL LOWER LIP AFTER REMOVAL OF THE NATURAL ORGAN FOR EPITHELIOMA.

By F. H. BALKWILL, L.D.S.Eng.

THE following is a description of the case which was exhibited to the members of the Western Counties Association at their meeting at Plymouth last July.

Previous to my seeing the patient he had been operated on by Mr. G. Jackson, F.R.C.S., for an epithelial cancer of the lower lip.

The following are notes of the case supplied by Mr. Jackson:—

T. J. Rowe, æt. 66 years, about seven years ago first noticed any tenderness, but often used to have a chapped, cracked lip; used to smoke a short clay pipe. A hard horn formed on the lip quite an inch-and-a-half long, which fell off and was removed constantly. No family history of cancer, previous health good, had a large hernia, which became strangulated, and on which I operated about 13 years ago.

About June, 1888, I saw the lip (not having seen it for some years, it not being cancerous when I saw it before, but only suspicious

looking). Then the middle two-thirds of the lower lip were involved, which I removed, leaving, of course, the gums exposed. No enlarged glands anywhere.

When he came to see me about the end of April, 1888, the lower part of his face was swathed in bandages, partly for the sake of appearance and partly to control the flow of saliva, which, without, poured down his beard and neck, and was very irritating.

On examination I found that the whole of the lower lip was removed from the angles of the mouth vertically to the chin, so that there was no ledge in front of the lower alveolar ridge above the chin, and, as a consequence, whenever he moved his tongue to swallow or speak, all the saliva in the mouth was pumped out over his chin.

As he was edentulous, with very fair alveolar ridges, it was determined in the first place to make him a set of teeth with springs; it being anticipated that if a well-fitting lower piece were kept in place by springs the tongue would be able to, at any rate, pass all the flow of the sublingual and submaxillary glands backwards to be swallowed, and it was hoped that even the flow of the parotid glands might be directed into the cavity of the mouth by the pressure of the cheeks against the gums and teeth of the artificial set about the region of the bicuspid.

A set of teeth in the ordinary method, with springs, was accordingly made and fitted, and, as was hoped, almost completely controlled the flow of saliva.

After he was fairly comfortable in his new set it was determined to try and improve his appearance by adding a lip and partial chin to the front of the lower set.

This was done in the following manner:—First, that part of the lower set opposite the vacancy in the mouth, which was a pretty deep gum, was scored and roughened, the set was placed in the mouth and a batter of plaster of Paris poured into the roughened surface of the lower set so as to be held by it and at the same time take an accurate cast of all the soft parts surrounding the vacancy of the missing lip, more plaster was added and built up, and moulded to the contour of the missing lip so as to meet the upper lip suitably. When this had got quite hard, the set with the plaster attached were removed together. The lower piece with the plaster model of the false lip was then embedded in plaster in the lower part of a vulcanising flask, so that the lower piece and the lower surface of the plaster false lip were in one bed of plaster when this was set; three

plaster cores were cast, so as to take the cast of the two sides representing the impressions of the cut edges of the cheek and the modelled surface of lower lip and chin, but not the upper surface of the lower lip, which was left open. These cores were removed, the plaster model of lip taken out and the exposed vulcanite surface of the lower cleaned. Vulcanite was now packed on to this by the method so often described of packing on the model; the cores were replaced and vulcanite built in to fill up the place previously occupied by the plaster lip, the contour of the upper surface being guessed. After vulcanising and finishing, a few brass eyes were screwed into the surface of the chin and on to these a piece of beard was sewn. As a result he is quite presentable; the dribbling is quite controlled, and he can once more smoke.

Figs. 1 and 2 are from photographs taken with and without the artificial lip.

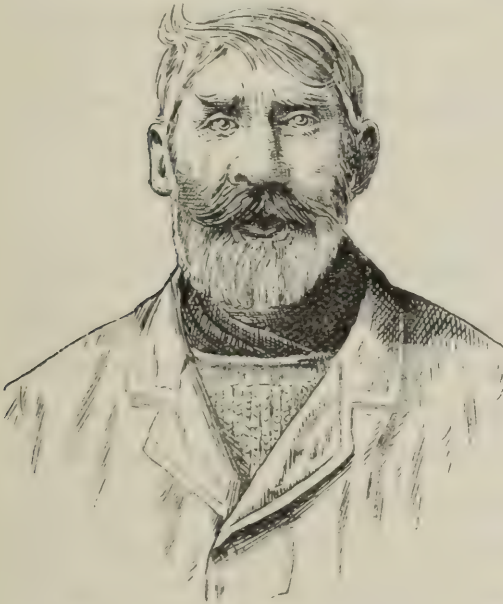


Fig. 1.—After the operation.

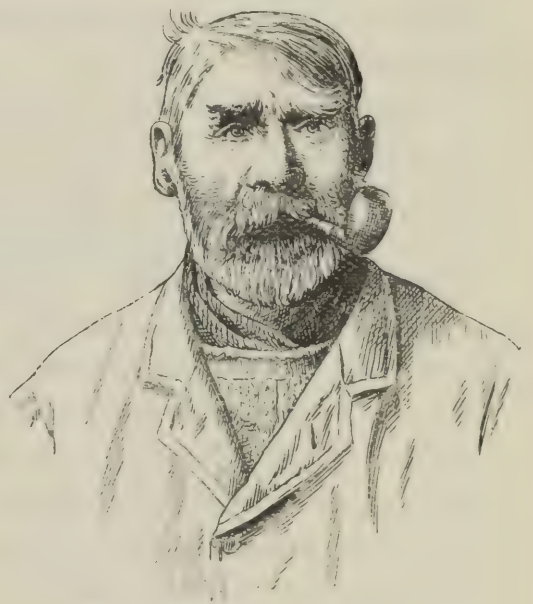


Fig. 2.—With the artificial lip.

UNITED FRACTURE OF TEETH.

By W. SCOTT THOMSON, M.R.C.S., L.D.S.Eng.

Two cases of united fracture of teeth have been recently brought forward at our societies. In Dr. Williamson's communication to the Odonto-Chirurgical Society of Scotland, the tooth a central incisor was removed in two portions, the crown with the upper portion of the root attached by the patient himself because it was loose and uncomfortable, and the apical part by Dr. Williamson. Upon applying the two together, it was seen that they accurately fitted, the cementum and the dentine being, however, apparently

fractured at a different level. There was a collar of cementum of the coronal fragment projecting beyond the dentine and this precisely filled a groove on the apical fragment, the cementum in the latter being somewhat thickened just where the two parts joined. The whole of the pulp chamber in the coronal fragment was filled with secondary dentine as well as that part of the apical fragment adjoining the fracture. The conclusions drawn were that a fracture had united, but not very firmly, by means of a coating of cementum about the periphery and a central core of secondary dentine.

Mr. W. E. Harding's case was that of a youth of seventeen, who fractured a central incisor in two pieces, the rent crossing the pulp chamber ; the two halves had become united by what was believed to be secondary dentine, but the results of the microscopical examination (a portion of the specimen having been presented to the Odontological Society with that view) have not been yet published.

Such cases from their rarity are sufficiently interesting to make a brief summary of what is known on the subject worth recapitulating. Tomes in his "Manual" mentions two cases of united fracture, one recorded by Sir Edwin Saunders, and one by Dr. Belisario ; he also quotes two instances which came under his notice, which, although not cases of united fracture, yet show that reparative action can be taken by the pulp and cementum. The roots of a molar were fractured from the crown, and, upon extraction, the nature of the injury not being previously recognized, were found to be completely covered with cementum ; and in the second case of a molar, the crown of which had been broken off some months before, the pulp had projected over the fractured roots, and been converted into a mass of secondary dentine. Professor Weld in his "Atlas" gives an instance of a fracture with misplacement, in the root of a bicuspid of a juvenile, where the parts had united. His description says that there was a layer of cementum passing over both fractured surfaces, and between these a layer of dentine ; the new cementum or callus was in different degrees of development, and in part showed signs of resorption ; the tubes of the newly-formed dentine ran in tufts towards the tubules of the original dentine, and there were also calcified canals, the remains of former vascularisation. Hohl has collected fourteen cases in man and animals, of the former, seven were incisors and one a bicuspid. Hyrtl and Heider each contribute a case.

One of Hohl's examples is thus related : " Professor V——, as he was about entering a railway-car in 1866, fell, striking his mouth upon the sharp edge of an iron step in such a way that the right superior central incisor was broken lengthwise. The fracture separated the tooth in the middle of the crown, so completely, that the two fragments diverged from each other, and could be moved back and forth. After the lapse of fourteen days, during which time the intense pain entirely prevented the use of the fractured tooth, a more comfortable condition ensued, and in a few weeks more the tooth completely resumed its normal functions. The two halves of the tooth became firmly adherent to one another, and the line of union was indicated by merely a fine line with a slight brownish tinge."

Underwood gives a report of *fibrous* union of a central incisor which retained its position for six years.

There is a fallacy to be guarded against in many specimens, that displacement may have taken place during the developmental period and complete union formed, and therefore the history of the particular case is of considerable importance.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE above Society held its first meeting after the Christmas recess at its rooms, 40, Leicester Square, on the 14th ultimo. Mr. S. J. HUTCHINSON, M.R.C.S., L.D.S. (Vice-President), in the chair. The meeting was well attended.

After the minutes had been read and confirmed, and the nominations for membership had been proceeded with,

The CHAIRMAN said : Gentlemen, this being the annual meeting of the Odontological Society, we commence our proceedings by opening the ballot for the election of President, Officers, and Council for the ensuing year. I have also to announce that the Council have the following recommendation to make, viz. : That three additional non-resident members of Council be elected at the annual general meeting. Perhaps some gentleman will move it as a resolution.

Mr. FELIX WEISS rose to move the resolution, and in doing so said that the feeling of the Council in recommending the alteration of the bye-laws was that at the present moment, as they were aware, they had nine resident and only six non-resident members of Council. Having regard to the distance that many of the non-resident members had to come, it was thought desirable to strengthen their numbers

by the addition suggested. He trusted that in saying that much he should not convey the impression that the non-resident members had not hitherto been equally vigorous in their attendance with the resident members. On the contrary, he felt sure he should have their general concurrence when he said that they had been surprised and gratified by the regularity of attendance of non-resident members ; there were some, he believed, who had never been absent from a single meeting. He proposed the resolution, then, not to remedy an absenteeism which did not exist, but to give the non-resident members the more adequate representation which it was thought they deserved. He hoped that in time they might propose the extension of town members. In conclusion, he moved that, instead of fifteen, there should in future be eighteen members of the Council, by increasing the number of non-residents from six to nine.

Mr. THOS. ARNOLD ROGERS begged permission to second the resolution, and did not think it needed any recommendation, believing, as he did, that it would be cordially accepted. It would be remembered that they began with only twenty members of Council, including all officers ; at the present time they had twenty-nine, and if the resolutions were carried they would have thirty-two.

The CHAIRMAN : Well, gentlemen, I think the resolution will be carried. It is very satisfactory to hear what Mr. Weiss has told us with regard to the regularity of non-resident members. I am sure that the resolution, if carried, will strengthen the Society in every way. The proposition now is, " That three additional non-resident members of Council be elected at the annual meeting."

The resolution was carried unanimously.

The CHAIRMAN here requested all other than members of the Society to withdraw while the bye-laws were read, the regulations not permitting the presence of strangers during this proceeding.

Upon their return, Mr. JAMES STOCKEN asked whether the new rule could operate before the election next year ?

The CHAIRMAN, in reply, said that he felt no difficulty in dealing with the point raised, but before doing so he would read Bye-law 26, which stated that the President should regulate all the proceedings of the Council and meetings, and decide all difficult questions. Bye-law 27 was to the effect that, in the absence of the President, the Vice-President could give the Council power to fill up any vacancy which should occur between the annual meetings. The new rule having become law, vacancies had been created, and he

took it that they would be acting in strict accordance with the laws of the Odontological Society in forthwith proceeding to fill up those vacancies. He felt no hesitation in assuming the responsibility of deciding the point.

The ballot for officers and councillors for the present year resulted in the following elections :—

PRESIDENT : Henry Sewill.

VICE-PRESIDENTS : (Resident), J. H. Mummery, W. F. Forsyth, Felix Weiss ; (Non-Resident), G. C. McAdam (Hereford), J. Cornelius Wheeler (Southsea), W. Bowman Macleod (Edinburgh).

TREASURER : Thomas Arnold Rogers.

LIBRARIAN : Ashley Gibbings.

CURATOR : Storer Bennett.

EDITOR OF THE TRANSACTIONS : Walter Coffin.

HONORARY SECRETARIES : C. J. Boyd Wallis (*Council*), E. G. Betts (*Society*), J. Ackery (*for Foreign Correspondence*).

COUNCILLORS : (Resident), John Fairbank, David Hepburn, Ashley W. Barrett, R. A. Woodhouse, L. Matheson, W. Scott Thomson, E. S. Tones, Willoughby Weiss, W. H. Woodruff ; (Non-Resident), E. Apperley (Stroud), J. H. Redman (Brighton), R. Wentworth White (Norwich), T. C. Parson (Clifton), R. T. Stack (Dublin), F. J. Vanderpant (Kingston-on-Thames).

The CHAIRMAN : I will now call upon Mr. W. Hern, who has a casual communication to make.

Mr. W. HERN : The case that I have to bring before the Society is interesting, not only for its rarity, but also on account of the exceptional lesion caused by it. It is a case of embedded lower denture in the lower jaw, accompanied by anæsthesia of common and special sensation of the right half of the tongue through pressure on the gustatory branch of the fifth nerve. The case came into my hands in May, 1888, when the patient, J— B—, 45, came to the Dental Hospital of London complaining of something being amiss with the tongue and mouth, but did not complain of much pain. The breath was very offensive. She was wearing a partial set with springs. The upper plate was of vulcanite, and almost complete. The lower one was a dental alloy plate, carrying one or two molars on either side. On looking into the mouth with a mirror, hardly any of the plate could be seen, as a large mass of granulations under the tongue obscured the central portion, while the sides were so deeply imbedded that the springs appeared to work through the granulation tissue surrounding them. On examination

with a mirror a dental alloy plate could be partially seen which had slipped downwards, backwards, and to the right side. The right half of the tongue was non-sensitive to tactile sensations, and the sense of taste was absent, as found by testing with sugar, salt and sulphate of copper. There was no anæsthesia of the lip or gums. I had some difficulty in removing the plate, having first to cut the springs. I could not get the springs out together, nor could I see how far the plate went back. I removed the plate after a good deal of trouble, accompanied by considerable pain and free hæmorrhage. On opening the mouth on a subsequent visit, I noticed beneath the mucous membrane, near the anterior pillar of the fauces, a white cord which I took to be the gustatory nerve trunk. This it proved to be, for on pinching it slightly with a pair of conveying forceps a disagreeable sensation—"pins and needles"—was referred to the right side of the tongue. The patient has been seen from time to time and sensation has to some extent returned to the tongue, although it is very incomplete at the present time. I had told the patient that I thought that the sense of taste and touch would probably return; the patient now frequently complains of tingling of the tongue on this side. The wound of the mouth has quite healed, and the excessive granulation and induration about the frænum and root of the tongue has disappeared. I took the best model I could of the case I have brought before you; it shows the position of the plate pretty well before removal, but it does not show the large mass of granulations about the frænum of the tongue. I have also a model after removal of plate. These I have much pleasure in presenting to the Society's museum. I would remind the Society of a case somewhat similar to this which was brought forward by Mr. F. Canton in 1879. Another came to this hospital in 1880, and was under the care of Mr. Claude Rogers—both are reported in the *Transactions*. In both the recorded cases mentioned, the plates have been fitted with springs.

Mr. FREDERICK CANTON: The somewhat similar case of mine to which Mr. Hern has referred is one in which I was sent for on account of the difficulty the patient had in swallowing. The appearance presented was that of two huge tongues. She had a lower plate with a gold bar, and the gold bar had cut through the frænum of the tongue, which had united over it. The bar had to be cut out of the mouth. The most marvellous fact in connection with this case was, that the patient was able to stand the ulceration

which had been going on ; it had proceeded so gradually that she had not had much pain.

The CHAIRMAN : I think the Society is very much indebted to Mr. Hern for mentioning these cases ; they are practical cases, such as we may meet with in our daily practice.

Mr. C. ROBBINS : About two years ago a medical man brought a patient to me who had had a breast removed. She was afraid she had cancer in the mouth. I made an examination, and found that the plate she was wearing was firmly imbedded in the tissues of the mouth, the back of the case was coated very much with tartar which covered the floor of the mouth. I learnt upon inquiry from her that the plate had not been removed from her mouth for nine years. She told me that her last dentist made the case such an excellent fit that it never required to be removed.

Dr. MITCHELL : Mr. Chairman, I should like to ask Mr. Canton whether in his case there was any impairment of the sublingual lines ?

Mr. CANTON : No, sir ; there was no impairment.

Mr. G. CUNNINGHAM : All the cases previously mentioned have been lower dentures and usually with springs. I may mention the possibility of somewhat similar if less grave effects being produced by an upper denture without springs. A case came under my notice in which from a full upper denture, causing irritation at the posterior edge of the gold plate, such a growth of mucous membrane and gum tissue took place that the flap of new growth gave the appearance of a double palate. The corrosive action of the secretions from the ulcerated surfaces was such for some distance that the original thickness of the gold plate was greatly reduced until it ended in a keen knife edge. The overgrowth probably originated from excessive pressure at the posterior margin of the plate, intensified by a movement backwards, from absorption of the alveoli anteriorly after extraction. I regret that I am unable to give the history of the case as the patient did not adopt my advice, which was, that the plate should be at once discontinued, and the extensive flap of tissue removed.

Mr. JAMES STOCKEN : A case of an upper gold denture came under my notice. The patient had worn the case for seven years without having once removed it. It had evidently been inserted after the extraction of several molars and other teeth ; it was a large suction plate without springs. The subsequent absorption had left a considerable space between the gold plate and the gum ; moreover,

the edge of the plate had cut deeply into the sulcus, setting up a very considerable amount of irritation and ulceration. The result of this was a vast amount of gum growth. When called in to see the patient, I found hypertrophy of the gum had taken place to such an extent, that not only was the space between the plate and the gum filled up, but a complete pad of gum all round the plate, causing considerable protrusion of the upper lip. It was with extreme difficulty that I could remove the plate; when I had done so, I found the mouth in a sad condition. I suggested a lotion of tannin and chlorate of potash, but advised the patient to see his medical adviser.

Mr. HOCKLEY: I think, Mr. President, that there are few of us who cannot recount similar experiences in our practice, all of which illustrate the importance of instructing our patients to remove their plates frequently, and visit the dentist periodically for examination of their mouths.

Mr. F. CANTON: Where gold plates with springs have been worn, I think the conditions to which we have been referring may, in many instances, be attributed to a want of fit in the plate, resulting in a sawing motion, by which it has gradually worked its way into, and become imbedded in the mucous membrane.

The CHAIRMAN: May I just point out that it would be interesting to know the result of the treatment; whether, in the cases referred to, the mouth has been restored to a completely healthy condition.

Mr. JAMES STOCKEN: In my case, Sir, it did not resume its normal condition, but the mouth became much more comfortable.

Mr. HERN: With regard to the case that I have referred to, I will only say that the patient was very apprehensive that cancer would result, and I was not free from anxiety myself; however, although the wound is still observable, the induration and large granulations have completely disappeared.

Mr. C. A. HAYMAN was then called upon for a casual communication, and related the history of a case in which he had restored, artificially, the right side of the superior maxilla, the molar and orbital regions, and the soft parts covering them, after repeated operations for the extirpation of a large sarcomatous growth.

Two months ago the patient, aged 46, called on Mr. Hayman; he stated that two years previously a growth had appeared in the vicinity of the right eye which increased in six months. This turned out to be a sarcoma of the superior maxilla, and that bone was removed by operation in the Bristol Royal Infirmary; recurrence took place and a further operation was undertaken, but the growth

again recurred. The patient then came under the care of Mr. Morris, of the Middlesex Hospital, who removed the growth, taking away the eye, floor of the orbit and what amounted to the whole of the right side of the face. After the operation a large chasm remained, the roof of which was formed by the roof of the orbit, the inner wall by the septum of the nose, the outer wall by the outer wall of the orbit, pterygoid processes, and ascending ramus of the lower jaw, the floor being formed by the tongue, and a portion of the soft palate. Posteriorly it opened widely into the pharynx. Mr. Hayman adopted the following steps to remedy the deformity. A model of the mouth was obtained after considerable difficulty, as the lips were contracted; a tray was modelled in wax and made in vulcanite, and a model was taken in AI composition. An ordinary upper plate was made in the usual manner.

To make the palate hold was more difficult than in ordinary cases of congenital cleft. A slight flange of vulcanite was extended to fit outside the face in front of the ramus of the jaw, and against the septum nasi; then a large wedge of vulcanite was added to fit into the posterior nares. This palate improved speech and mastication. A model of the remaining hollow was then taken in beeswax; this was cast in plaster of Paris, moulded in sand, and casts and dies were taken in metal. A silver plate made in two sections was struck up, soldered together and fitted to the face; it fitted under the right alar nasi and a piece of silver passed over the bridge of the nose, allowing spectacles to be soldered to it. The artificial cheek and eye were then modelled in wax to match the other side of the face; this was moulded in sand, metal casts and dies taken. A large piece of silver was struck between the metal casts (models) and fitted and soldered to the inner plate, like putting a cover to a box. A vent hole was drilled to prevent warping in cooling. The mask was kept in position by strong wire extending from the cheek to the right ear, while a pair of spectacles was soldered to the nose piece, the ear pieces of these being connected behind the head by an elastic band. The eye and face were then painted and japanned.

The patient was shown immediately after the notes of the case were read, and the members had the opportunity of examining the apparatus in detail at the close of the meeting.

The CHAIRMAN: I think, gentlemen, that you will agree with me in offering our congratulations both to the patient and to Mr. Hayman, upon the skilful treatment of this remarkable case. If any members would like to ask any questions, I shall be glad if they will now do so.

Mr. HERN: I should like to ask Mr. Hayman whether the vulcanite is solid or hollow.

Mr. PATTERSON: Would Mr. Hayman kindly say whether the oral portion of the apparatus is in one or two parts?

Mr. HOCKLEY: Might I ask if the patient is able to wear the apparatus continuously?

Mr. C. A. HAYMAN in reply to the various questions said:—The palate is solid, I am sorry to say, because of course it is heavier on that account, but it was necessary as it could only be made by a process of building up, small pieces of vulcanite being added to the original plate. The patient takes off the cheek at night but leaves the plate in, as I am apprehensive that he would otherwise catch cold. I have instructed him to keep the plate very clean. The large opening at the back of the artificial cheek has to be kept full of cotton wool. If the apparatus hurts him at all he has to come to me at once.

Mr. CHARTERS WHITE: Would you kindly say how long it is since the operation was performed?

Mr. HAYMAN: Last January.

THE CHAIRMAN: I will now call upon Mr. E. Lloyd Williams for his casual communication.

Mr. E. LLOYD WILLIAMS: The case which I wish to bring before the Society is only interesting as an instance of absorption of both hard and soft tissues in the mouth as the result of constant pressure, and in this respect it resembles to some extent the interesting case mentioned by Mr. Hern. The patient, a man 51 years of age, applied at the Dental Hospital in July last under the following circumstances: he stated that about two years previously he had suffered some inconvenience from two upper molar teeth on the left side, which had become very loose and painful. He eventually got rid of the teeth by the aid of his fingers, but whether they had been pushed into the mouth, or whether any portion of either of them had been forced into the antrum, it was difficult to determine. The history of the case was necessarily a little clouded from the fact that the patient was totally blind as the result of a skating accident; it was, however, to be assumed that alveolar abscess with some amount of necrosis had taken place, involving the antrum. To obviate the discomfort of a passage between the mouth and the nose, the patient had plugged the opening with gutta-percha. The plugs had to be enlarged as time went on, and then the patient had decided in his own words "to bed the gutta-percha with something that would not give quite so readily," and for this purpose he had selected a piece of lettuce

stalk. On examination I found that a large opening about an inch in diameter communicated with the antral cavity, and the latter had been considerably enlarged, there being an extensive opening into the nose, and it extended above almost as far as the orbital plate. The cavity was lined with mucous membrane and this was ulcerated in several places, but there were no portions of bone anywhere exposed. The model, which I pass round Mr. Chairman, gives a good idea of the opening; I have also here the gutta-percha plug and the piece of lettuce, the latter, however, has suffered somewhat from maceration. The treatment I adopted was to insert a plain vulcanite plate which acted as an obturator. I would mention that my patient to add to his other misfortunes, recently swallowed a brass screw and has been in the wards of St. George's Hospital trying to get rid of it. He has, however, this afternoon been discharged, and will present himself for examination after the meeting.

The CHAIRMAN: I have much pleasure in announcing that Mr. Williams's patient is here, and may be examined at the close of the meeting. Mr. Storer Bennett, I think, has a casual communication to make.

Mr. STORER BENNETT: What I have to say, Mr. Chairman, is hardly worth being called "a casual:" it is simply to present to the Society two skulls, one of a cheetah, which I was fortunate enough to obtain from the Zoological Society. It is quite perfect, and is another example of carnivorous creatures. The other specimen is the skull of a young seal it is interesting in so far as its dentition is complete; it has the normal number of teeth, but they are not all erupted, and we thus have the transition between the first and second dentitions shown.

Mr. CHARTERS WHITE: Mr. Chairman, may I have the pleasure of offering these photographs, which Mr. Hayman has given me, to the Society. They illustrate the case he has brought before us this evening, and he wishes it to be noted that the *surgical* operations were performed by Messrs. Boord and Morris.

The Chairman having thanked Mr. White, called upon Mr. Mitchell.

Mr. MITCHELL: The first case which I wish to present to your notice this evening is one of rather peculiar irritation in the inferior dental nerve. A gentleman came to me requiring a partial lower and an upper denture. I had great difficulty in taking an impression owing to an inordinate tendency to retching. I could not take one in plaster

of Paris. When the sets were ultimately completed, and I put the lower plate into its place, the patient complained of acute pain, and there was violent coughing and retching accompanied with cerebral congestion incidental thereto. Careful examination showed that the symptoms were produced by the plate—which was only of ordinary dimensions—impinging upon the inferior dental foramen, which was evidently very high up. I could trace it with a ball-pointed burnisher. I should mention that the patient had lost his molars and bicuspiids by absorption of the subjacent tissues, the prominence of the nerve was thereby greatly increased. Digital examination on either side, but particularly on the left side, produced all the symptoms that the plate produced. The way I dealt with the case was to shorten the plate and put in one molar instead of two. I found that probably his previous plate had been constructed in the same manner from the same reasons. This plan resulted in the cessation of all discomfort and unpleasant symptoms. I have also a case of restoration which is a little interesting, inasmuch as it is restoring the features on the *inside* of the mouth, while Mr. Hayman's was the *outside*. You will see that it is the restoration of the anterior portion of the superior maxilla by the adaptation of a continuous gum case, an equivalent to the portion of the maxilla anterior to the second bicuspid on the left side and first bicuspid on the right, being restored in porcelain, and posterior to those parts as with an ordinary case. The patient is quite unable to speak or drink without the case.

The CHAIRMAN then called upon the Treasurer to read his report.

Mr. T. A. ROGERS said he was very happy to record a prosperous year. It would be remembered that last year he expressed a doubt as to whether it would be possible to have so good a balance this year as they then had, and in this respect his doubts had been realized. The reduction in the balance to be carried forward was due to increased expenditure for rent and alterations, and also to the greatly increased cost of the "*Transactions*" owing chiefly to the large number of engravings and illustrations. In referring to the elections and resignations, Mr. Rogers dwelt in kindly terms upon the loss the Society had sustained by the death of Mr. George Hilditch Harding. In conclusion, he took the opportunity of thanking the Society for the many courtesies and considerations they had shown him; he would only add that if they wished to show him a still further kindness they might do it by the punctual payment of their subscriptions

and thus save him a correspondence which he could assure them was by no means light.

The Librarian (Mr. FELIX WEISS) in presenting his report, said that during the year 1888, 49 members and 64 students had availed themselves of the privilege of borrowing books ; independent of these there were those who had used the waiting-rooms for the purpose of reference. It might be interesting to know that their library consisted of nearly 1,200 volumes, 180 of which were on special or general surgery not included in Cowley's Medical List. The Society might be congratulated upon having the most complete dental library in the world.

Dr. GEORGE CUNNINGHAM in briefly referring to the librarian's report, regretted that German dental literature was not more largely represented, and suggested also the advisability of procuring a copy of the "*Transactions of the International Congress*" if the library did not already contain one.

Mr. WEISS replying said, that with regard to German works there were 39 volumes, and 27 volumes of serials. He might also state that they had numbers of volumes which contained a great number of German works bound together. So far from being deficient in German dental literature he thought that they had a very large collection. While speaking of foreign authors he might mention the curious fact that they had only one Italian book and that was dated 1563.

The Curator (Mr. STORER BENNETT), in making his report, regretted that the Museum had for so long a time been of so little use to members. Owing to the large alterations which were commenced in 1887, all the specimens in the galleries and the West portion of the Museum had to be packed away, and it had been a task of no short duration to replace them and check them with the catalogue. He had much pleasure in stating that nearly all the cases had been restocked, and by next year, instead of being merely numbered as heretofore, he hoped they would all have *descriptive* labels. Twenty-nine specimens had been added during 1888 as against fifty-three in 1887 and forty-one in 1886.

The CHAIRMAN then read a letter from the President, Mr. Daniel Corbett regretting that age and ill-health prevented his attending and delivering a valedictory address.

The following additional non-resident Members of Council have been elected :—A. A. da Lessert (Aberdeen) ; M. de C. Dickinson (St. Leonards-on-Sea) ; Alexander Fothergill (Darlington).

Mr. DAVID HEPBURN proposed and Mr. R. H. WOODHOUSE seconded the usual vote of thanks to the outgoing President and Officers, to which Mr. S. J. HUTCHINSON from the Chair, and Mr. T. ARNOLD ROGERS responded. The meeting then separated.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE Odonto-Chirurgical Society of Scotland held its first meeting for this session on January 10th, Dr. W. H. WILLIAMSON, President, in the chair. The date for the commencement of the session had been postponed two months later than usual, it being intended to substitute meetings in the months of April and May for those usually held in November and December, to facilitate the attendance of members from a distance.

The PRESIDENT opened the meeting by referring to the loss they had sustained in the death of one of their members, Mr. Matthew Finlayson, and moved that a resolution of sympathy with Mrs. Finlayson should be inserted in the minutes, and that an excerpt from the same should be forwarded to that lady in the form of a letter of condolence.

The President showed Dr. Taggart's corundum point and disc maker and exhibited its method of use, which led to a short discussion favourable to the instrument.

Mr. BIGGS made a communication to the effect that he had been experimenting in the direction of a combination of chloroform with nitrous oxide in order to prolong the anæsthesia, 10 or 12 drops being placed on a piece of wool and inserted in the brass tubing connecting the face-piece with the rubber tubing. The results he had found very satisfactory, and suggested that those present should give the method a trial, and report at a future meeting.

The SECRETARY read a paper by Mr. Walter Whitehouse, L.D.S.Edin., on

WHITE FILLINGS,

the discussion upon it being postponed till the next meeting, in accordance with the rules of the Society.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

THE Annual General Meeting of this Society was held on Monday, 21st ult., the PRESIDENT (Wm. Hern, Esq.), in the chair. The Secretary having read the report of the Council, the Treasurer read

his report, which showed a balance of £21 3s. 0½d., as against £16 8s. 7d. the balance in hand at the beginning of the year. The President announced that Dr. Stropenick, of Brussels, had presented a microscope to the Society, and a cordial vote of thanks was passed by acclamation. The following were elected office-bearers for the ensuing season:—

PRESIDENT : Mr. Wm. Hern.

VICE-PRESIDENTS : Messrs. C. F. Rilot and J. F. Colyer.

TREASURER : Mr. F. C. Porter.

SECRETARIES : Messrs. W. H. Dolamore and F. A. Harsant.

CURATOR and LIBRARIAN : Mr. E. Preedy.

COUNCILLORS—*Senior* : Messrs. Black, Burton, Parsons, Oliver and Spray. *Junior* : Messrs. Barrett, Briault, Forsyth and Hern.

Mr. W. H. DOLAMORE then read his paper on

DENTAL ABSCESS.

After briefly reviewing the formation of an abscess in the subcutaneous tissue, laying stress on the absence of any distinct wall, except such as was formed as a result of the condensation of the surrounding tissues, consequent on pressure, proceeded to discuss the pathology of alveolar abscess, which, he considered, differed from other abscesses, merely on account of the anatomical peculiarity of the parts. He divided the affections into sub-periodontal, which he stated were usually acute and of septic origin, and extra-periodontal, which might be acute, as from the escape of foreign matter through the apex, or chronic, especially from the breaking down of thickenings of the periodontum. This thickening he urged was often due to a rheumatic affection, thus explaining the frequency of abscess in persons living in damp districts. He showed some specimens lent by Mr. Storer Bennett illustrating the absorption of the bone consequent on abscess, and stated that its tendency was to make a way through into the looser tissues of gum and cheek, an event signalised, clinically, by rapid swelling and diminution of pain. He illustrated many of his points by cases he had met with, and by some slides and photo-micrographs and drawings lent by Mr. E. Lloyd Williams. He then urged those present, especially students, to co-operate in obtaining results of cases of abscess, which he considered the Society ought to publish, and, in conclusion, he commented on the absence in this school of any means for scientific research in a properly equipped histological laboratory.

In the discussion which followed, the President, Messrs. Lloyd Williams, Baldwin and Harsant took part. After Mr. Dolamore had replied, a hearty vote of thanks was accorded him.

A vote of thanks to the President and retiring officers was proposed in eulogistic terms by Mr. Baldwin, seconded by Mr. Porter, and carried by acclamation. The President having briefly replied, announced that the next meeting would be held on Monday, February 11th, when Mr. Woolf would read a paper on "Gold and Richmond Crowns."

EXTRACTS.

A CASE OF PRIMARY ALVEOLAR MELANOTIC SARCOMA OF THE LOWER JAW IN AN INFANT.

By R. DENISON PEDLEY, L.D.S.Eng., F.R.C.S.Edin., and GEORGE A. CARPENTER, M.B.Lond.

IN February of the present year Florence W., aged 3 months, was brought to the Out-patient Dental Department of the Evelina Hospital by her mother, who stated that when a month old a small lump the size of a pea was noticed on the gum in the middle line of the lower jaw. The mother rubbed this with her finger, and a tooth appeared. This apparently gave rise to some pain; the child was very fretful, unable to take the breast, and in consequence advice was sought of a medical man, who extracted the tooth. Shortly afterwards a black spot appeared on the site of the extracted tooth, and this had continued to grow. On examination the child was wizened-faced, emaciated, of dark complexion, and the skin of the trunk and limbs was also of dark colour.

Over the seat of the lower central incisors there were two pear-shaped black patches, each being about the size of a lemon-pip. The mucous membrane covering these was unaffected, the tumour being merely seen through it. The apices of the pear-shaped bodies were directed forwards, and almost met in front, their bases pointing outwards and backwards. There was considerable expansion of the jaw from before backwards, affecting chiefly the right side, and reaching as far as the position of the first temporary molar.

Some days after the child was placed under chloroform for a more extended examination. The black patches previously mentioned had increased considerably in size. A portion of the tumour, over the seat of the central incisors, being removed, the section showed the

growth extended quite deeply into the substance of the jaw, and it was of coal-black colour. There was free oozing of blood from the mass, which, however, ceased on the application of the actual cautery to the bleeding points.

The microscopical appearances of the portion removed, the sections being cut parallel to the surface of the tumour, are as follows:—

Examined with a low power, the basis of the tumour consists of a nucleated fibrillar *stroma*.

In this portion, which is of less recent growth, the stroma is more densely fibrous, the nuclei being smaller; while in the more recent portion the cells are more distinct and stellate, with large nuclei. Secondly, the stroma is seen to form alveoli of various sizes, containing groups of cells of a widely different character.

The *contents of the alveoli* are cells, for the most part round, but often irregular in shape where densely packed. In size they are perhaps a trifle larger than a leucocyte, and take the aniline stain deeply. The nuclei are large, and almost completely fill the cells. In the recent parts of the tumour, as above described, only a few of these cells are seen to be infiltrated with melanotic granules, while in the older portions the infiltrated pigment appears to have burst through the cells, and have at first filled the alveoli with a mass of pigment granules. In many instances this has fallen out, and consequently we find empty alveoli containing pigment round the margins only.

It is also to be noted that in the growing parts of the tumour there is no very distinct demarcation between the stroma and the intra-alveolar cell masses, in some places the stroma, here of extreme tenuity, appearing to pass in between the individual cells, while also a few isolated cells, resembling those in the alveoli, are found distributed throughout the stroma. In the central portions of the intra-alveolar cell masses, however, it was impossible, even with a $\frac{1}{12}$ th oil immersion, to distinguish any stromal tissue between the individual cells, or even groups of cells.

At first glance the sections suggested scirrhus carcinoma, but we think that the growth is really sarcomatous, on the following grounds:—

Firstly, the intra-alveolar cells do not appear to be epithelial; and secondly, as stated above, in some parts a delicate fibrillar stroma can be traced between the individual cells in the cell-masses.

The right lateral incisor tooth made its appearance on February

17th, and was removed on the following day, because it caused discomfort on suckling.

On February 22nd the child was again seen; she appeared bright, and took notice of her surroundings. The tumour was extending rapidly, and was quite superficial over the site of the lateral incisor and canine teeth of the right side. In some parts it was black in colour, and in others had a greyish appearance. The inferior maxilla was much expanded, and the expansion was extending rapidly towards the ramus. No secondary deposits were detected. The fundus oculi was normal on either side.

The patient was seen a fortnight later, and although the tumour was increasing, and so raised above the surface of the jaw posteriorly that the child could not close its mouth, yet her spirits did not appear to be affected.

Since this we have lost sight of the child, the parents having removed from the neighbourhood.—*Illustrated Medical News.*

TIN AND GOLD IN COMBINATION.

(A paper read by DR. CANADAY, at a meeting of the Central Dental Association of Northern New Jersey.)

THE use of tin and gold in combination has been variously estimated and discussed. My opinion of it, based on an experience of several years, is favorable to its further use—in the cases to which it is adapted.

There is a class of teeth that need treatment directed to the end that they may not only be preserved against the encroachments of decay, but that they may, in course of time, become sufficiently improved in condition to be permanently filled with gold. Such teeth are found in the mouths of delicate children of well-to-do parents, who are usually taken to the dentist early in life, when an examination reveals a condition like unto this: teeth of low grade; fissures in the grinding surfaces of first permanent molars, with either incipient or well advanced decay; fissures in buccal surfaces of inferior molars in similar condition, and the palatal fissures of superior molars affected in like manner. At this time the bicuspid are not yet erupted, or, if in place, escape decay till a later period.

The proximal surfaces of the teeth are usually free from decay at this period.

If the teeth, in a mouth of this order, can be so treated that there will be an arrest of decay, we may confidently look for an improved state of affairs in a few years. The child usually improves in health, the tissues are better nourished, and the teeth, in structure and condition, show decided change for the better. In such a case, tin and gold combined make the best material that we have at command for filling uncomplicated cavities in the posterior teeth. Properly manipulated, it makes a filling which is unobjectionable in colour and which will not discolour the teeth. It provides a filling which possesses good antiseptic qualities, making it one of the best tooth preservers, and has the merit of being *easily* manipulated, so that it may be successfully employed for the most nervous and impatient children.

I first used the combination of tin and gold in a case where the teeth were of a decidedly "chalky" texture, employing it in all cavities that did not involve a proximal with a grinding surface.

It was expected that in two or three years the wear, which fell to the lot of the greater number of these fillings, would necessitate their removal and, we hoped, that when this became necessary the teeth would be sufficiently improved in condition to warrant the insertion of gold, with a prospect of permanency attending its use. These fillings, although several years have elapsed, remain in place to this time and are unimpaired.

The treatment of this case was followed by many more, with like results, and to-day it is accepted practice with me to fill uncomplicated cavities in teeth of "low grade," with tin and gold, with the reasonable expectation of results satisfactory, alike to my patient and myself; the "results" being a marked improvement in the quality of the tooth adjacent to the filling and no extension of caries.

In preparing cavities for the introduction of the combination filling, I aim to make the walls nearly parallel, following up and removing every vestige of decay. When this has been done, I give the cavity walls a slight slope or undercut, using for this purpose an inverted cone bur in the dental engine. The reason for using a bur of this form is, that with it I can shape the cavity so that the first piece of filling material may be carried to its place and so fixed that it will not slip or roll when being condensed.

In excavating cavities in teeth of the class under consideration, or indeed in preparing any cavity for filling, it is necessary to use extreme care that the preparation be *thorough*, and, I have seen

no more timely statement in this connection than that of Dr. Barrett, in the *Independent Practitioner* for May, where he says editorially: "No cavity should be wholly prepared by means of the engine bur. The rapidly revolving point conveys no sensation to the brain of the dentist; with it he cannot feel the exact line between sound and unsound structure. The necessary tremulousness of a point in rapid revolution destroys all delicacy of touch. * * * The softened dentine within a cavity of decay cannot be detected with the engine. The bur is excellent for cutting out decayed tissue, but it should always be directed by a probe which has explored the way before it. The excavator should be substituted for the bur at every step, and with it the diseased tooth bone should be clearly defined. *This* being cut out, the engine should stop until a further examination has been made. * * * Let any dentist who is accustomed to do all his excavating with the engine, go carefully over all the surfaces of a cavity that is supposed to be ready for the introduction of the filling, and he will often be very much surprised at finding softened dentine when he had supposed it all removed, and he will, perhaps, have made clear to his apprehension the cause for certain hitherto inexplicable failures. Use the engine, by all means, but not without the aid of the exploratory excavator."

The preparation of the filling material consists in folding a sheet of No. 4 tin foil within a sheet of No. 4 cohesive gold, being careful to observe that the tin is completely enclosed in the gold. For convenience of manipulation this is folded so that it corresponds to No. 48 foil in thickness. This is cut in ribbons of a width suited to the case in hand. These are *slightly warmed* over the flame of a spirit lamp, when they are ready for use.

It is *necessary*, when introducing this material into a cavity in a tooth, that moisture be entirely excluded during the condensation of the filling if the best results are to be obtained. Let no one be deceived by the statement so often made that this combination of metals works "just as well" under water as when all the conditions of dryness are observed. Fillings of this material made wet, or that are imperfectly condensed, show, in teeth of "low grade," leakage, with an accompaniment of secondary decay in a short space of time, while, if properly made, markedly beneficial results are obtained. In packing the prepared filling material, in a properly prepared cavity, one end of a ribbon is carried to the most distant point in the cavity and fixed into position, the balance of the ribbon is then folded in,

care being observed to provide for an overlap, as would be done in filling the same cavity with cylinders of soft foil. Successive ribbons of foil are introduced in the same manner till no more can be inserted. The overlapping portion is then condensed by hand as thoroughly as possible, after which, a suitably shaped smooth steel burnisher, rotated in the engine, is employed in the final condensation. The electric or hand mallet, with suitably shaped instruments, may be substituted for the engine burnisher if preferred, although, to my mind, the revolving burnisher furnishes the best results, and, in my judgment, a mallet ought never to be employed on soft or immature teeth. The filling, when suitably condensed, is readily finished by means of a properly shaped finishing bur in the engine.

Another use I make of the tin and gold combination is in proximal cavities of bicuspid and molars, in soft teeth, as a guard at the cervical wall when there is extensive decay. The material may be used with a matrix in these cases, if desired, care being observed to prepare the cavity with this in view, but I find better restorations of contour obtainable without a matrix. It has been my custom to employ the tin and gold, in operations of this class, for from one-third to one-half of the filling, finishing with gold. I give the combination the preference over tin alone in these cases because of better colour and less tendency to discolour the teeth.

A use of tin, of which I wish to speak, is related to its employment in deep coronal and proximal cavities, as an intermediary between the tooth and the surface filling of gold. In these cases I consider it best to make use of as much tin as may be employed and still permit proper anchorage for the gold which faces the filling. The reason for employing a considerable proportion of tin is that, the tin being employed for its non-conducting and therapeutic effects, we obtain the best results by this use of it. Where a lining for cavities, not complicated with pulp exposure, is needed, I prefer pure tin.

In the use of tin and gold in combination, the necessity for thoroughness is not to be lost sight of at any stage of the work. Thorough and careful preparation of cavities, care to obtain freedom from moisture, and then, thorough condensation of the filling are absolutely essential to success. Fillings made in this way show a surprising change of condition after a very few months. The excavator finds them nearly as hard as a good quality of amalgam, margins clean or showing occasionally a line which indicates the preservative action of the filling, and no crevicing; showing

altogether the happiest results in young and soft teeth, placing them in such condition that, after a few years, they may be permanently filled with gold, and without the probability of serious loss of substance, through recurring decay, before the arrival of that happy period.

DENTAL EDUCATION.

A RECENT article in the *Journal of the British Dental Association* discusses two schemes for improving the professional education of dentists, but the list might easily be extended by the addition of one if not two others. It may be said that one scheme proposes to amplify the present examination by including dental mechanics, and developing the practical part of it; but does not in any way change the curriculum, and is distinctly against division. A second also seeks to improve the examination, but proposes to divide it; requiring all students to pass the first and second professional examination for the M.R.C.S. and L.R.C.P. This would materially develop the curriculum, and would for the first part of their career place the dental and medical student on the same footing. The final examination, however, for the dentist would consist as at present, of dentistry and surgery only, but amplification to be made in the subjects of operative and mechanical dentistry.

To render this increased curriculum possible, it is proposed to reduce the three years' apprenticeship to a dentist (for the purpose of mastering the mechanical department) to two and a-half years, and to increase the hospital career to two and a-half years instead of two.

A third scheme proposes some enlargement of the curriculum, and the establishment of a new diploma or degree; M.D.S. (Master in Dental Surgery) to be taken by those who desire a higher diploma than the L.D.S. (Licentiate in Dental Surgery) after a more thorough and searching examination. The fourth, which however seems to have but few advocates, proposes to create a degree in dentistry, D.D.S. (Doctor in Dental Surgery).

In considering these proposals, it would be well that the dentists should make up their minds as to the exact position they wish to take in relation to the medical profession. If, as most of us believe, it is desirable for them, and indeed for the medical profession as a whole, that they should be an integral part of it, then the second

scheme is the one that will commend itself. From this point of view it is encouraging to see the dentists who but ten years ago were unrecognised as a profession, without an Act or a Register, anxious to blend more closely with the rest of the profession.

It would be a decided advantage to both medical and dental students if during their period of study at the general hospitals, there should absolutely be no difference in their curricula until after the examination has been passed in anatomy and physiology. From that point the medical student would devote himself to the subjects for his final examination, the dental to those required for the L.D.S.

The fault of the first scheme is, that until an adequate examination is required of the dental student in anatomy and physiology these subjects will be neglected, notwithstanding the fact that they are the groundwork upon which the subsequent superstructure has to be built up. Moreover, it does not bring the dental into any closer communion with the mass of the medical profession.

To the third scheme it may be objected that it separates the dentists as a distinct profession, and that it creates a new diploma whereas one source of strength to the dental profession has been its one diploma, with which the public and the profession are becoming familiar; the establishment of a new one would produce confusion. The multitude of the medical qualifications is only a cause of weakness, and should not be followed by the dentists.

Finally, a development of the practical and mechanical examination for the L.D.S. would provide all that is required, if in addition it could be arranged that an "Honours List" could be published after each dental examination, or an honours examination held in addition to the ordinary one. All that can be gained, from a professional point of view, from this third scheme can be supplied by the second. If other or higher qualification are required there are enough to be obtained by those who choose to work for them.—*British Medical Journal*.

ELECTRICITY AND SULPHUR IN DENTISTRY.

(A Communication to First District Dental Society, New York. Reported by the "Cosmos.")

THE subject-matter that I wish to present to you to-night is not the record of a finished experience or of a series of valuable experiments, but simply the narration of a few hints which I have been fortunate enough to discover and which I wish to give to you, so that each in his own way may test the matter. For I am convinced

that these hints contain germs of truth which in abler hands than mine can be made of value to the profession.

For years I have known in a general way that burning sulphur was valuable as a destroyer of vermin and also of disease-germs, but it was only within the present year that the thought came to me that perhaps it might be equally potent for use in canals containing putrescent pulps. The thought was at once followed by action, and the experiment was so entirely successful that since that time it has been used in each and every such case occurring in my practice during the past ten months. In the beginning I used a medium-sized probe, which was heated in a flame and dipped in sulphur, and while it was fuming carried to the desired spot. But I soon found that this caused a blackening of the surface of the cavity which was sometimes hard to remove. I then joined a piece of platinum to my probe with better results, but for a considerable time I have used the electric cautery, the platinum-wire loop being small and twisted so as to get sufficient stiffness in a wire small enough to enter the pulp-canal. The results of this treatment are briefly these. It very materially shortens the time necessary to restore inflamed and abscessed roots to health, there is generally an almost immediate cessation of pain, it does away with all other medicaments or disinfectants, and makes out of a troublesome and often unsuccessful operation one that is generally successful and comparatively easy—so much so, that out of a large number of devitalized teeth whose roots I have opened, cleaned and filled, I have not had to extract more than five per cent. Such results I have not been able to attain by any other mode of treatment. In order that you may better understand this matter, let us take the superior central incisors and by them illustrate several different operations in which the sulphur is eminently useful. The left incisor we will suppose has a large, shallow saucer-shaped approximal cavity extending nearly the full length of the tooth, the wall merely plates of enamel, the pulp almost exposed, the dentine hypersensitive, the patient ditto. The cavity as presented has absolutely no under-cuts and no room to make any that will be adequate; and even if we dare drill, hoping to get something from nothing, the patient at once and most emphatically rebels.

I think that here we have the typical hard case, the multiplication of which has put gray hairs on many an honest head. In a large majority of similar cases our sulphur will help us. Before applying

the rubber dam, fumigating the gums with sulphur will frequently render them less sensitive to the cutting of the cord. Then before commencing to bur the cavity we will flood it with the fumes and will generally find a goodly measure of obtunding. It is quickly done, its effect is immediate and as lasting as anything that I know of; it does not materially hurt the patient, and can be applied as often as necessary. After we have cut as much as we dare and are still almost if not quite hopeless of any good result, we will make ready some cohesive cylinders or a mat of Williams's crystalloid gold, also whatever is our favorite in the way of cohesive gold, with which to form the filling. Then we will take the platinum loop and give it the proper heat to just melt the sulphur but not to burn it, and with this smear the floor of the cavity; then while it is yet soft heat the cylinders and place them on end in the cement, then while everything is still warm and before the cement has become brittle place on the cylinders and press into cohesive contact the masses of gold chosen to form the bulk of the filling. From this point complete and finish as usual.

We will find that we have secured a good degree of adhesion to the cavity, which, taken with the moderate under-cuts, will give us a fairly substantial filling.

Now we turn our attention to the adjoining central, and we find that it is so badly broken that nothing remains but to supply its place with an artificial crown. The canal is filled with a putrid pulp of the excessively malodorous kind, and of course there is an abscess with its accompanying inflammation and pain. The patient, unwilling to be hurt, begs for extraction as the least of two evils; but with a consciousness of being master of the situation, and with a prayer of thankfulness that we are thus master, we speak a word of comfort to the patient and reach for our lightning. With the platinum loop dipped in sulphur the canal is fumigated and with suitable drills opened a short distance, then with medium and small "Morey" drills we slowly advance towards the apex, alternately fumigating and drilling till we reach a point so near the apex, that there can be but an infinitesimal portion of septic matter left, and that will be so saturated with the sulphur as to be practically inert. All this time we have avoided with the utmost care going through the foramen, so as not to force any particle of septic matter into the inflamed tract surrounding the root, and which has already as much trouble on its hands as it can well care for. Neither will we put

medicament of any kind in the canal expecting them to go through the foramen. We have removed the cause, and we may well leave to nature the task of curing the effect, provided we do not complicate matters by forcing into that diseased tract hot irritating foreign substances, such as carbolic acid and the like, which if put on a healthy place would cause rebellion most emphatic. At this point you can elect whether you will practice immediate root-filling, or do what will perhaps oftentimes be better, close the canal and dismiss the patient for a few days to allow the excitement in the associate parts to subside. If the case should prove stubborn, the sulphur treatment can be repeated as often as necessary. After shaping the end of the root as usual, we are ready to prepare the canal for the crowning process. In cleaning the canal we were careful not to enlarge it more than just enough to remove the septic surface, and we have left its natural taper as nearly intact as possible. We will now take an "Ottolengui" reamer of the smallest size that will fill the canal, and ream it out to the point reached by the drill; this will give us a tapering hole of a moderate size with a good amount of solid root on all sides. In this we will fit a platinum and iridium pin of the same taper, getting as exact a fit as possible.

Placing this firmly in the canal, taking care however not to fasten it there by too much pressure, we mark the exact spot where it emerges from the root. We will now take an old-fashioned wood pivot tooth and fit it to the end of the root. Then being guided by the mark on the pin, we will cut the pin to such length as will allow the crown to sit firmly on the root. The pin must now be shortened at the crown end just a trifle, so that when placed in position it will not quite fill the tapering hole in the root and there will be a little space for the sulphur cement around the pin. Now heat so as to dry the crown and fill the hole with sulphur, then holding it in a pair of pliers melt the sulphur. Also have the pin hot and coated with melted sulphur, then place the pin in the hole in the crown in about the proper position and hold steady till cold. Now with the platinum loop dry and heat the canal as hot as is safe and pleasant. If the canal is not dry the cement will not adhere. With the loop at a low heat smear the inside of the canal and the end of the root, and while it is still warm take the crown this time in your fingers that you may not get too much heat, and heat the pin and thickly coat it with the melted sulphur; then place it in the root, pressing firmly, and at the same time getting the alignment,

for the cement that holds the pin and crown together will have softened sufficiently to allow of this. In a few moments all is cool and fast, and you have an operation easily, quickly, and comfortably performed, and one that will stand as long as many a one that has given a great deal more trouble to both patient and operator. If you wish to remove or change the position of the crown, take a small pair of straight forceps and heat the beaks quite hot, and grasp the crown, and in a few moments the cement is soft and you can do with your tooth as you please. There are other uses for the melted sulphur, such as fastening handles to instruments, uniting metals and glass, &c., all of which you can study out for yourselves.

In my remarks to-night I have spoken of my use of electricity only in its relations to sulphur. In reality that is but one of several uses to which I put it. In various ways it is my willing and ever-ready helper, and a source of much comfort to both my patients and myself.

I am well convinced that any dentist with a reasonably full practice would find it greatly to his advantage to have this help, and I feel confident that in a few years it will be as common as the dental engine is now.

ON RAISING THE EPIGLOTTIS.

By ROBERT L. BOWLES, M.D., F.R.C.P.

(Consulting Physician, Folkestone Infirmary).

ON October 22nd, 1888, Dr. B. Howard read before the Medical Society of London a paper on "A New and Only Way of Raising the Epiglottis." The first intimation I had of this paper was its publication in the medical journals, and I missed the debate from being told that it would not come on for a year at least, in consequence of Dr. Howard's absence from England. Dr. Howard has done me the honour of quoting me in his paper, but not, I think, in a way for my views to be well understood. I would, therefore, wish to give publicity to the following extracts from some papers of my own, by which it will be seen that I had already done (at various times since 1856) all the work which is now in 1888 presented to the public as new and original.

Extract No. 1 is a letter to the *Lancet* from R. L. Bowles, 1856, and reproduced in Dr. Marshall Hall's book on "Drowning," in August, 1857: "On cutting down and removing the right side of the pharynx, with the corresponding halves of the hyoid bone and thyroid cartilage, in another subject, a tolerable view of the position

of the parts was obtained. The epiglottis was in direct apposition, by its laryngeal surface, with the posterior wall of the pharynx, so as to preclude the possibility of the passage of air. When, however, the head was allowed to hang backwards, over the edge of the table, the bending of the cervical vertebræ caused the posterior wall of the pharynx to recede from the epiglottis, so as to allow the free passage of air. If the tongue had been drawn forwards, would the epiglottis have been removed from the pharynx, or would the prone position cause it to fall forwards?"

Extract No. 2, from "Observations on Stertor," by Robert L. Bowles, in the *Medico-Chirurgical Transactions*, 1860: "It is well known that the cavity of the pharynx, having a fixed boundary only posteriorly, may have its capacity materially affected by the ever-varying position of its sides, of the soft palate, the tongue, and the larynx. The larynx and the sides of the pharynx have, I believe, little connection with the cause of stertor. I shall, therefore, not further refer to them. The tongue, being attached to the lower jaw by its mucuous membranes and its muscles, has its relations with surrounding parts altered as the mouth is opened or closed.

"When the mouth is closed the ramus of the jaw forms nearly a right angle with the spinal column, from which the symphysis is then at its greatest distance. When the mouth is opened by the dropping of the jaw, the symphysis describes the arc of a circle, and approaches more nearly to the spine, where the posterior wall of the pharynx is attached. The tongue, having its chief attachment to the symphysis, would consequently be drawn down from the pharynx in the former case, and allowed to rest in contact with it in the latter. This, if not true in every case, is at least true in some.

"When the mouth was opened and the subject on its back the road to the larynx was completely obstructed in consequence of the tongue resting in contact with the back of the pharynx; but the obstruction could be removed by hooking the tongue forward. When the mouth was closed the tongue was lifted from the pharynx, leaving ample breathing space. But, even with the closed mouth, if the chin were much bent on the sternum, the base of the tongue was almost in contact with the back of the pharynx.

"It would seem from this dissection that the muscles of the tongue attaching it to the symphysis of the jaw, are too short to admit of the base of the tongue reaching the back of the throat when the mouth is closed. The purpose served by such an arrange-

ment would appear to be to keep the base of the tongue away from the back of the throat during deglutition. In the act of deglutition the mouth is firmly closed, and the genio-hyoid and genio-hyo-glossi muscles taking their fixed point from the now immovable symphysis draw the body of the tongue upwards and forwards, allowing sufficient room for the morsel of food to travel easily through the cavity of the pharynx. Were these muscles of greater length, the base of the tongue might become a source of inconvenience, if not of danger. The dissection, besides demonstrating the respective positions of the tongue with the open and closed mouth, suggests the necessity of caution being used in raising the head with pillows; for if the head be too much bent forward on the chest the tongue may lie in dangerous proximity to the pharynx, even if the mouth be closed."

Extract No. 3, from a paper read by Robert L. Bowles at Canterbury, November 28th, 1863, and published in the *Journal of February 6th, 1864*: "When the patient is in the position recommended in the Silvester method, the tongue may appear to an unpractised eye to be well forward, while the base of it lolls back and covers the glottis; and if there be fluids in the stomach (which is not uncommon), they are very liable to be thrown up into the pharynx when pressure is made on the sternum; and when the pressure is removed, the next inspiration would certainly draw the fluid into the bronchial tubes. . . . Only a fortnight ago, I was present at the reduction of a dislocation of the shoulder in a county infirmary. The patient was sitting on a chair fastened to a post, whilst the pulleys were on the arm. After chloroform had been administered for some time, the man suddenly ceased breathing and became deadly pale, the jaw dropped, and the tongue touched the incisor teeth. The gentleman who had charge of the chloroform immediately procured water and dashed it on the face and back. Seeing the man did not recover, I at once, though a stranger, introduced my finger into his mouth and hooked up the base of the tongue, when the patient instantly inspired, and rallied without further difficulty."

Extract No. 4, from a case mentioned in "Further Observations on Stertor, its Pathology and Treatment," by Robert L. Bowles, read before the Royal Medical and Chirurgical Society, May, 1870, and published in the *Lancet* of 1881: "Presently he began snoring whilst he was on his side; his chin was bent upon the sternum; on straightening the neck he was quiet."

Extract No. 5, from notes of conversation between Dr. Bowles

and the chief clerk of the Royal National Lifeboat Institution, made by the latter, and sent to Dr. Bowles on the following day by the secretary, Mr. Richard Lewis (May 21st, 1880). Dr. Bowles states "that the mere drawing forward of the tongue and securing it by an elastic band does not have the supposed effect of drawing with it the epiglottis and leaving the glottis open."

From these extracts it will, I think, be seen that Dr. Howard claims too much in asserting that his method is the new and only way of raising the epiglottis, or that it is, as he expressed it in his paper, "my discovery." I should rather have said that everything he has done was undertaken to test the truth of what I had told him, for at his request in 1881, I sent him my paper on Stertor, and three or four years later he called upon me, and at our interview we fully and freely discussed the whole question of the relation of the tongue and the epiglottis to the posterior wall of the pharynx.

Soon after 1860 I undertook some experiments on myself, on the dead subject, and on animals, to test the utility of drawing the tip of the tongue forward, and I found that it was quite useless as a dependable proceeding; the experiment answered, in fact, the question raised at my first dissection (extract No. 1) for the display of the relations of the throat in the supine position. It was, moreover, made clear that in cases of coma, drowning, sedative poisonings, and allied conditions, in all cases, in short, in which physical have supplanted vital forces, that impediments to respiration may always be removed from the back of the throat by simply placing the patient on his side, slightly prone, and keeping the chin well away from the sternum, so that it became unnecessary to trouble in individual cases whether it was the base of the tongue or the epiglottis, or both, which blocked the way. At medical meetings in London, and wherever and whenever the Silvester method has been advocated, I have never lost the opportunity of showing how impossible it was to remove the base of the tongue or the epiglottis from the posterior wall of the pharynx by dragging at the tongue's tip, or by fixing it by an india-rubber band, or by any such device. The truth is that the work done by us (Dr. E. Long Fox, the late Charles Hunter, and myself) for the late Dr. Marshall Hall, in 1856, was fundamental, and must be fully taken into account in all investigations undertaken to elucidate the principles or the practice of relieving the difficulties of respiration connected with the throat and the upper air-passages.—*British Medical Journal*.

THE DENTAL RECORD. LONDON: FEB. 1, 1889.

THE MECHANICAL TRAINING OF THE DENTAL STUDENT.

AT a time when the dental world is somewhat disturbed as to the efficiency of the licensing examinations, it is not unprofitable to take an introspective view of some of the existing features of dental education which have a direct bearing upon the subject. The great mistake made in gauging educational advancement of every description is to rely solely on "results," and ignore the weightier consideration of "methods." The master of an elementary school holds his inspector in reverential awe, not because his capabilities as a practical instructor are likely to be probed, but lest the "pass list" should contain fewer names than had been anticipated. It often happens that the *system of teaching* stands more in need of *examination* than the unfortunate taught ones, who have nothing better to digest than a miserable course of "cramming." That the evil exists in connection with elementary education may be made patent to anyone who cares to peruse the blue book which is annually presented by the Educational Council; and that something similar in character occurs in connection with dental education might also be made very clear if we but had a "blue book" of the College of Surgeons to fall back upon. And while we would not detract one iota from the importance of having the dental licence as thorough as it can be made, yet we are of opinion that the training which leads up to examination is fully as important, and in some respects, more so.

Of all the subjects of dental education which require more attention and fuller development, there appears to be a consensus of opinion that "dental mechanics" holds a foremost place. And it is not difficult to account for this. In the first place it has been neglected, and—for reasons which resolve themselves into a Chinese puzzle—has been practically

ignored in the English licensing examination. That this anomalous state of things should exist very long is contrary to the logic of circumstances; and if our feeble voice be of any avail, we intend hammering away in the chorus "until the gods descend." In the second place, the mechanical training of the dental student is the very foundation of his future work; for not only is it of specific value as applying to an important, as well as lucrative, branch of the calling which he will by-and-bye be engaged in, but it is the surest method of training eye, hand, and brain for that nicety of manipulation, without which he will be neither a credit to his profession nor of benefit to his patients. *We have never yet come across a brilliant operator who was not a good mechanic.* If he exists we shall be glad to note a rare species.

At present the student is required to serve a pupilage of three years to learn mechanical dentistry, one of which may overlap whilst doing his hospital work. Although the time is short in which to acquire anything like a firm grasp of work which covers a large area, yet it would perhaps be difficult to insist on a longer pupilage; and an intelligent pupil who has the good fortune to enter the workroom of a capable teacher will have learnt a good deal even in this short period. On the other hand, a dull, or even an average pupil, too often pays his premium to a practitioner who takes no interest in his workroom, and the hapless youth is left to the tender mercies of an assistant, who works in one groove, and is either unable or unwilling to impart to anyone else the narrow lines of his own shuffling incapacity. Again, even provided that the instruction has been good, the pupil will—in nine cases out of ten—be totally ignorant of dealing with anything more vital than a plaster model, from the fact that he will have seen little or nothing of practical work *in the mouth*. All those who have any experience of students are only too familiar with the hopeless collapse which often occurs when they are brought face to face with an actual case of mechanical difficulty, and this is solely due to the fact that their previous work has had to do with inanimate materials and not with living tissues. That in spite of these

drawbacks, we have brilliant exceptions occasionally, we gladly acknowledge; but no one who has cast a careful eye over the present condition of dentistry can have failed to notice that we are not educating our young men in mechanics either adequately or wisely. What reforms may safely be introduced it is difficult to specify in detail, but we may point out two which, if adopted, would certainly ameliorate the present condition of things. The first is simple and immediately feasible, viz.: the inclusion of practical dental mechanics as a subject of examination. The second presents some difficulty, but if properly carried out would be of immense benefit:—we refer to the establishment at our dental schools of thoroughly equipped laboratories, where the student would spend *one* out of the three years of his mechanical work, and be instructed by specially qualified teachers in all branches of dental mechanics. Here he should be allowed to construct cases and insert them in the mouth himself, and thus become familiar with the fact that his mechanical art is neither so dull nor so conventional as some of us are apt to imagine. We are well aware that a scheme of this sort is not easy of achievement, but the whole work of dental reform has been difficult, and has entailed an enormous amount of thought and devotion. We are optimists in this respect, and believe that we have still amongst us those who will strive to overcome every difficulty, in order to make the training of future dentists both thorough in its character and efficient in its results.

Dental Antisepticism. The value of antiseptics in general surgery has been of distinct benefit to science and an incalculable boon to mankind; but while acknowledging the great advance made, we are too apt to forget that our chief indebtedness to "Listerism" is for the "gospel of cleanliness" which underlies every method which has been introduced. The mischief that has been wrought by dirty instruments coming in contact with tissues highly susceptible of infection is familiar to all, and it behoves us to apply the principle of cleanliness with especial care to all our dealings with the delicate tissues of the mouth. We cannot tell how much mischief has been

set up by a dirty pair of forceps, or a probe charged with septic material; and, although it may be termed a "fad" by some operators, we are certain that it is the duty of every dental surgeon to secure his patients (who place themselves entirely in his hands), from any possible source of infection, by adopting a routine practice of rendering all instruments at least perfectly aseptic. Many agents have been recommended, but for practical purposes a 10% solution of carbolic acid is most convenient, and this bath should always lie on the bracket table for immersing *all* instruments immediately before use. Where infected areas of dentine have to be dealt with which cannot be thoroughly removed, we think that antiseptic precautions should be adopted by incorporating with the material used some germicidal agent. For these cases the drug can be easily incorporated with the gutta-percha or oxyphosphate employed, and we have found nothing so useful as Beta Naphthol. In mixing an oxyphosphate for root filling, the oxide of zinc should have one-fifth of its bulk made up with the naphthol; this slightly delays the setting, and will be found very efficient.

Dental Appointments. THE great advance made by dental surgery in this country during the last few years has considerably affected the relationship between the profession and hospital administration. Formerly, there were many hospitals which altogether ignored the services of the dentist, while several of our larger metropolitan institutions were very inadequately provided in this respect. Added to this, there too often existed a "hole-and-corner" system of appointing dental surgeons, and a single candidate was not infrequently put into power, almost without his knowledge, by the scheming adroitness of a personal friend on a management committee. All this is now a thing of the past, and a rule has been very generally adopted of *advertising* for candidates; in this way not only do the hospitals benefit by being able to select a suitable member for the staff by means which are open and above board, but the profession itself is relieved of any feeling of resentment as against an injustice to the general welfare of its members. Under these circumstances, we very much regret to find that the board of management of one of our largest hospitals has recently given cause of offence by making dental appointments without advertising in any way, and, if we may venture to say so, without consulting its own

dignity and the value of its high reputation. We consider that conduct of this kind should be put an end to without delay, and we would ask our readers to use all their influence in preventing the recurrence of what we are sure must be prejudicial to the best interests of all concerned. It is just possible that, by private selection, efficient services may be secured, but the system is absolutely bad in principle, and it behoves us to use all our individual efforts in trying to prevent for the future all attempts to tamper with what may be called the constitutional method of appointing dental surgeons.

REVIEWS.

THE SCIENCE AND ART OF TRAINING. By HENRY HOOLE, M.D.Lond.
London : Trübner & Co. 1888.

ATHLETICISM in its various bearings is of universal interest ; and although its two phases—one of which is purely “ professional,” and the other hygienic—are not of equal importance, yet the subject is one which will always command attention from the fact that it bears directly upon the important consideration of physical development. Dr. Hoole’s work supplies a want which had long been felt for a handbook which should serve as a guide to training for athletic sports of various kinds. The laws laid down by “ professional trainers ” are too often but the outcome of traditional ignorance, and betray their authors as wanting in the most elementary facts of physiology. It is therefore a matter for congratulation that the subject has been taken up from a strictly scientific point of view, and treated in a manner which is comprehensive without being tedious.

After a short introduction having reference to the antiquity of training, the author proceeds to treat of the preparation for athleticism, and lays bare some of the fallacies which exist in the popular mind.

A chapter on the “ Formation and Development of the Human Body,” which will prove very acceptable to the lay reader, leads up to the important consideration of the various classes of food and their comparative value. Here we cannot altogether agree with the author’s conclusions : as, for instance, on p. 30, where he states that veal is “ more readily digested ” than beef. Neither will he be largely supported in stating that crabs are more nourishing and “ quicker digested ” than oysters. In treating of alcohol as a subsidiary food, we think the writer has been particularly happy in describing

its effects upon the body in a manner which will prove acceptable to all but "extremists." The same remark applies to the use of tea and coffee. The subjects of diet and digestion, the muscular system, exercise and rest, and personal hygiene, all claim careful treatment at the hands of the author, and are free from exaggerated views or distorted statements.

Dr. Hoole is to be congratulated upon marshalling his facts in scientific form whilst relying almost entirely on non-technical terms. The book is well written and distinctly readable; and we cordially commend it to all who are interested in the subject of athleticism.

EPITOME OF DISEASES AND INJURIES OF THE EAR. By W. R. H. STEWART, F.R.C.S. London: H. K. Lewis. 1888.

THE preface states that "frequently asked by practitioners and students for some work of reference on ear diseases, small enough to carry in the pocket, the author hopes that this little work, which epitomises the chief features of Aural Surgery, will meet the want." We may at once state our opinion that the author's hopes have been realized, and a vast amount of information condensed into one of the smallest medical books which it has ever been our lot to read. Though necessarily concise, all the important points in connection with aural diseases are touched upon; and as an exceptionally clever epitome, this little book should find its way into the pockets of both students and practitioners.

OBITUARY.

It is with sincere regret that we have to record the death of Mr. Matthew Finlayson of Edinburgh, who died on the 8th January at the age of 57, having spent some thirty years in arduous professional work. His indisposition and subsequent illness had been somewhat protracted, and the symptoms very obscure, but these were, however, explained in an autopsy, by the discovery of a tumour lodged in the right frontal lobe of the cerebrum. He was a member of the British Dental Association and Odonto-Chirurgical Societies, and at the meetings of the latter, where he always took an active and prominent part, his honest and kindly presence will be much missed. Many of the members will recall with pleasure a meeting held at his house where a most practical demonstration of continuous gum work was lightened by subsequent proceedings of a more social nature. He was a Surgeon to the Edinburgh Dental Hospital and Honorary President to the Students Society, and though his position in the latter was an honorary one, he took an active and earnest interest in its welfare.

GOSSIP.

ALL who attended the very successful dinner last year in connection with the Athletic Club of the Dental Hospital of London, will be pleased to hear that a similar entertainment is announced for March 2nd. The prospect of an enjoyable evening, with the presence of Sir Edwin Saunders in the chair, ought to attract a large gathering of past and present students, as well as well-wishers of the Hospital.

THE history of a curious case was related at a dental meeting lately, and as the facts are not likely to be officially reported, we jot them down from memory for the benefit of "all whom it may concern." A patient had an upper central root crowned with an ordinary "pivot," the pin being secured in the old-fashioned way with mastic and silk. In a day or two the tooth got loose, and the dentist was applied to for his good services in the "silk and mastic" line. A repetition of the performance on a subsequent occasion led to some little irritation on the part of the dentist, and in an unguarded moment he vowed that a better man than he should fix it in next time should the unlucky tooth attempt to stray from its adopted home. The patient was not a little awed by the objurations of his dental adviser, and in spite of considerable pain and swelling, he bore all his troubles quietly and without complaint. His nose ultimately became very irritable, and a slight discharge began to trickle peacefully down his face; but even this was borne with exemplary patience and fortitude, until one day the unhappy man in performing the common duty of blowing his nose, was surprised to find what he thought was a piece of thread protruding from his nostril. This he pulled out to such a length that he began to have grave suspicions lest he had suddenly become endowed with the magic of a conjurer, or acquired the endowments of a patent prize puzzle. What had really happened was no puzzle to the dentist when at last appealed to for assistance. The "thread" he recognised as *his own silk*; but the moral is the property of *all*.

WE most of us indulge in tea-drinking, and in spite of dreadful warnings about tannin and dyspepsia, the tired dentist will probably continue to imbibe the stimulating beverage. Under these circumstances, the results of some experiments on three unblended samples of tea by Dr. Hale White of Guy's Hospital, reported in the

British Medical Journal, are of considerable interest. A was the finest Assam ; B the finest China ; C common Congou ; no green tea of any kind being used :—

Mark of sample.	Percentage of tannin by weight extracted by infusion for three minutes.	Percentage of tannin by weight extracted by infusion for fifteen minutes.
A	11'30	17'73
B	7'77	7'97
C	9'37	11'15

The result, Dr. White says, "is what might have been expected, as tannin is very soluble in hot water, and nobody who has drunk Assam or any other Indian tea, and the choicest China, would require any scientific analysis to tell him which would be most likely to disorder the stomach and nerves. It is of course true that any tea which has been infused for some time has a more marked effect than tea which has been infused a shorter time ; but this difference is due not so much to the tannin as to strength. The moral, therefore, for persons with weak digestion is to select the best China tea they can get, and not to drink it strong ; to be satisfied with flavour and not to desire intoxication. They must be particularly careful, also, to see that the tea is not blended. Sample B is worth about 5s. a pound retail."

THE annual meeting of the British Dental Association takes place this year at Brighton ; and as the last meeting at Dublin was such an exceptionally good one, our Brighton friends will naturally feel very anxious to hold their own in upholding the prestige of the Association. We trust that all our readers, who are not already members, will join at once, and rally round the standard of dental reform. In this case there is certainly "safety in numbers."

THE Editor of an American dental journal, announces himself as "Editor and Bus. Manager." Brevity is said to be the soul of wit, but in the instance just referred to, the literal observance of the old adage is calculated to mislead an unwary public into the belief that there must be some connection between "running" a dental journal and that useful and commodious vehicle which is available *for all*. It reminds us of the country practitioner of

medicine who sought to attract patients by announcing himself on a large brass plate as "Surgeon and Accoucheur." An Irishman pulled up in front of the new doctor's brass plate, and after staring at it for some time with a puzzled expression of countenance, scratched his head, exclaiming, "Bedad, that's the first time I ever knew a man to be a Surgeon and an Auctioneer."

ANNOUNCEMENTS.

ODONTOLOGICAL SOCIETY.

THE next meeting will be held on Monday, February 4th, when the newly elected president, Mr. Henry Sewill, will deliver his Inaugural Address, and several members will bring forward Casual Communications.

STUDENTS' SOCIETY OF DENTAL HOSPITAL OF LONDON.

THE next meeting will be held on Monday, February 11th, when a paper will be read by Mr. Woolf on "Gold and Richmond Crowns."

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.

THE Annual Dinner will take place on March 2nd at the Holborn Restaurant, when Sir Edwin Saunders, the president of the club, will take the chair. The tickets (5'6 each), can be obtained from the Hon. Secs. at the Hospital.

VACANCIES.

DENTAL HOSPITAL OF LONDON.

DENTAL SURGEON.—Applications on or before Monday, February 11th, to J. Francis Pink, Esq., *Secretary*.

GUY'S HOSPITAL.

Six Assistant Dental Surgeons; Lecturers on Dental Anatomy and Dental Mechanics; an Anæsthetist; and a Dental Tutor. Applications on or before 25th March to Clerk to the Governors, Counting House, Guy's Hospital.

APPOINTMENTS.

COLYER, J. F., L.D.S.Eng., to be Demonstrator of Cohesive Gold Filling to the Dental Hospital of London.

FARO, R. S. N., to be Assistant House Surgeon to the National Dental Hospital.

HOWARD, F. R., L.D.S.Eng., to be House Surgeon to the Birmingham Dental Hospital.

READ, HENRY G., M.R.C.S., L.R.C.P., L.S.A., L.D.S.Eng., to be Assistant Dental Surgeon to St. Bartholomew's Hospital.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

PORCELAIN AND GOLD CROWNS.

To the Editor of the DENTAL RECORD.

SIR,—In your January issue Mr. F. G. Read mentions that the crown described was well known in the Dental Department of Harvard University; will you allow me to point out what I think the essential difference between the two, viz., the manner of fixing the porcelain to the gold. In the American crown the porcelain, which is specially made and not from the ordinary stock, is forced into the open top of the gold band, while the cement used to fix the same to the root is soft and is held in position by the pins becoming embedded in it. This, to my mind, is an element of weakness, allowing moisture to find its way into the cement, and to wash it out and eventually wreck the whole crown. In my crown the cement is as entirely boxed in as in the case of all-gold crowns.

82, High Street, Putney.

I am, yours &c.,

January 8th, 1889.

F. CHASEMORE.

A CORRECTION.

To the Editor of the DENTAL RECORD.

SIR,—Will you kindly correct an error in your report of my remarks in reply to the discussions upon my paper read before the Odontological Society at its last meeting. I am made to say, in speaking of the fitting of bands for gold crowns to irregular roots, "the band could be fitted on to a model out of the mouth." Now this is just what I did *not* say, being decidedly opposed to any model, except the root itself, as evidenced by my paper.

I am, yours &c.,

15, Upper Brook Street, W.

W. MITCHELL.

THE DENTAL DIPLOMA.

To the Editor of the DENTAL RECORD.

SIR,—The subject of dividing up the dental examination into two parts is most interesting and important. It has been suggested in the *Journal of the British Dental Association* and in your own paper, that the dental student should be compelled to pass the primary examination in anatomy and physiology of the Conjoint Board of England, and that he should then be examined for his diploma in Dentistry and Surgery, instead of in Surgery, Medicine and Midwifery, as is required for the L.R.C.P., M.R.C.S.

Now, Sir, I venture to think that the dental curriculum as it now stands (2 years' hospital attendance), will not permit the student to pass this primary examination, and to do justice to his practical dental surgery. Dissections and attendance upon lectures would fully occupy two winter sessions, thus leaving at his disposal for operative dentistry two summer sessions only—six months—which is far too short a time. Another winter session must be made compulsory in order to effect such a change, and the question arises "Is it advisable at the present time?"

I would rather say, let us improve our examinations gradually, and for the present, let the dental student be required to pass the elementary anatomy and physiology examination of the Conjoint Board for his primary, and let him be examined in surgical anatomy for his license. In conclusion, I would strongly urge students not to be satisfied until they have obtained the double qualification.

I am, yours &c.

London, January 23rd, 1889.

WM. A. MAGGS.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor, 2, James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers, 6 to 10, Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and Answers are invited on all subjects of interest, either surgical, mechanical, or ethical.

QUERIES.

L.D.S.Eng. would be grateful to the Editor of the DENTAL RECORD if, in a brief space, he can answer the following questions:—

Is the action on the heart of cocaine injected hypodermically for tooth extraction still thought to be of grave import—or is it a kind of nervous apprehension of a new and unknown agent on the part of the patient?

If this question can be satisfactorily answered by the Editor or any reader who has given the subject much thought (as well as practical experiment), will he add to the obligation by stating also briefly whose syringe and whose cocaine is best; What ought to be the medium and what the maximum dose, and in what vehicle? The writer presumes that the time required is two minutes on either side of the offending tooth—four in all—keeping in the nozzle of the syringe all the time, to allow the fluid to be well absorbed. But how long after both have been fully injected have the patients to wait till anæsthesia is perfect, and operations may be started?

The writer of this operates on “the slow and sure” principle in extractions, believing that hurried extractions are uncertain and unscientific; and that many long compound operations which test both the skill of the operator and the nerve of the patient might be avoided by making SURE of the FIRST operation, even if it takes a few extra seconds, and he would thus gladly have availed himself, long ago, of the use of cocaine, had it not been his principle to wait till more was known of an agent, capable apparently of doing more harm than good, according to the writings and experiments of some *confrères* in the days of its infancy. Now it has been fairly tested, perhaps many others would be glad to read an answer to my query.

* * The toxic effects of cocaine are not imaginary; and, after carrying out a large number of experiments, we are of opinion that it should not be used as a routine procedure in extractions. Many patients feel no after effects; but in some few cases, in our own practice, the symptoms have been rather serious. Under no circumstances should cocaine be injected when the patient is suffering from any cardiac disability. We think that half a grain should be the maximum dose for hypodermic injection, except under exceptional circumstances; and the salt should be dissolved in distilled water, *fresh for each case*. Six minutes is considered to be the best time to wait after injection. The hydrochlorate, of excellent quality, may be obtained from Martindale. For fully exposing pulps and ligaturing the rubber dam cocaine is invaluable applied locally.

ANSWERS.

DIRTY HANDS.—Apprentice will find that Hudson's Dry Soap, if sprinkled on the hands in washing, will effectually remove all dirt. To counteract the tendency to roughness after using, apply glycerine and rose water, 1 in 10.—MECHANICUS.

DIRTY HANDS.—For cleaning hands, however dirty, first rub well in warm oil, then sprinkle with powdered borax, and wash off in the usual way.—OLD FILE.

A GOOD MOUTH WASH.—L.D.S.Eng. may rely upon the following as being very efficient in treating sloughing surfaces about the mouth, and also good as a general mouth-wash:—

R Boro-Glyceride (Barff)
Tr. Krameria
Eau de Cologne, ā ā 3j
Spts. Vini Rect. ad. 3viii

m A teaspoonful to be added to a little water. ED., DENT. REC.

AFTER-PAIN OF EXTRACTION.—L.D.S.Eng. will find Aqua Chloroformi P.B., excellent for above. I generally render it slightly tepid with hot water, and give it to the patient to use instead of plain water after extraction. The relief is instantaneous.—R. E. JONES, L.D.S.I.

MOUTH WASH FOR SLOUGHING SURFACES.—One I have found effectual is composed as follows:—

R Acidi Tannici, 3i
Potassæ Chloratis, 3ss
Tinct. Lavand. Co., 3iii
Aquæ ad. 3x

m Ft. Garg. To be used twice or thrice a day.

N.B.—Touch the worst sloughs with a caustic, e.g., Arg. Nit.

R. E. JONES, L.D.S.I.

Mr. THOMAS FLETCHER writes to say that in his answer to query on "porosity of rubber" in last month's Journal, the word "manufacture" should have been "manipulate."

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from December 1st to December 31st, 1888:—

				London.	National.	Victoria.
Number of Patients attended ...				—	1584	832
Extractions	Children under 14	...	...	294	230	652
	Adults	...	...	803	394	
	Under Nitrous Oxide	...	...	626	748	88
Gold Stoppings ...				277	59	30
Other Stoppings...				904	480	100
Advice ...				127	426	—
Irregularities of the Teeth				132	96	—
Miscellaneous and Dressings				152	146	231
Total ...				3,315	2,549	1,101

[It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 3.

Original Communications.

ULCERATIVE STOMATITIS IN IMBECILES.

By ROBERT JONES, M.D., B.S.Lond., F.R.C.S.Eng.,

Medical Superintendent, Earlswood Asylum, and

ALVERSTONE GABELL, L.D.S.I., Dental Surgeon, Earlswood Asylum.

UNDER the above heading we refer to a peculiar and not infrequent condition of the buccal mucous membrane in children of weakened intellect. It is closely allied to the so-called noma or cancrum oris which runs a gangrenous course in anæmic, weakly children, such as those recovering from typhus, intermittent, and exanthematous fevers; also in those suffering from diabetes mellitus, or morbus Brightii. This form of ulcerative stomatitis attacks usually the mucous membrane opposed to the lower molar teeth. The surface affected presents a greyish, deeply ulcerated, uneven appearance, surrounded by an ill-defined margin of normal mucous structure; the surface seldom bleeds until the grey membrane dies away, the separation being rarely in the form of a slough. The process does not tend to spread, and the condition may be termed a slow but deep and severe ulceration. Usually, there is not much pain; but as all who have the care of a large number of feeble minded children are aware, the appreciation of pain is not a prominent feature, there being a generally diminished sensibility, so that, what is painful to others is not infrequently borne with complacency—such acutely painful neuroses as toothache, joint affections, and general inflammations being unaccompanied by any definite subjective symptoms. The subjects of this complaint which has some analogy with cancrum oris are like their class, those of feeble circulation, the arterial system is generally weak, they are easily affected by weather changes, bearing cold badly, exposure to a low temperature causing frost bites, chilblains and destructive catarrhs; once affected, recu-

peration is slow and reparation very tedious. The motor system is abnormal, defective co-ordination resulting in purposeless movements, rhythmical or irregular, and automatic or reflex; in many the muscular system is weak, lax or flabby, the muscles responding feebly to the action of the will. In stature the patients suffering from this complaint vary, as also in age and general physical characteristics. Prominent teeth, accumulation of tartar, or offensive stumps may favour this serious ulceration, and as food is apt to collect in the sulcus between the cheek and teeth, nothing conduces to greater rapidity of healing than cleanliness and general antiseptis. It is difficult to ascribe a more general cause than an ill-developed nervous organization, and it is doubtful whether this condition be due to anæmia with feebleness of heart, to any miasma, or blood dyscrasia. We are inclined to look upon the condition as more probably due in the first instance to nervous exhaustion favoured by local interference with the circulation—a capillary thrombosis—brought about by pressure upon the blood-vessels, owing, as the case may be, to a misplaced molar, an irregular wisdom tooth, or a general accumulation of insufficiently masticated food, which the buccinators, from want of proper tone, have omitted to dislodge, and which the patient has not voluntarily removed owing to his dull sensibility and deficient co-ordination. It is curious that this condition is rarely bilateral, nor does it often affect the labial mucous surface. In our cases no disposition to spread has shown itself; the nose, ears, and tips of the toes do not suffer, so that the conditions affecting gangrene do not invariably co-exist. There is little outward change to call attention to this disease, general apathy, loss of appetite, and offensive breath being the most prominent features; the children from their helplessness do not complain, the saliva and discharges are swallowed, and the patient may sink into hopeless exhaustion, collapse, great depression and prostration allied to a typhoid state if the symptoms are unobserved or the condition unattended to. Our treatment has been general and local; nourishing fluid food, in most cases stimulants, tonics of the nature of quinine, iron, ammonia and bark, or acids are administered; whilst locally, a wash of calendula followed by weak carbolic lotion and liquor potassæ are employed, the nurse being instructed to use the mouth applications frequently, and to excite the surface of the ulcer with a medium hard tooth brush dipped in the lotion once every two or three hours, paying particular attention to the patient after each

meal. The reason of our local treatment has been directed to stimulating the ulcerated surface to healthy action, to prevent absorption (by putrid matter swallowed) into the blood, to removing the cause of local pressure—an irregular tooth or stump—and as observed, to sustain the circulation by the administration of easily assimilated nourishment at frequent intervals. In our experience there has been no indication for opium or morphia as a sedative, and, although the condition of the patient has at times given us grave anxiety and recuperation has been slow, satisfactory healing has eventually resulted.

Two questions bearing upon the theory of inflammation present themselves to us: firstly, whether as suggested by some histologists it be possible for sloughing of a tissue to occur whilst its capillary circulation remains intact—that is, can a dead tissue still continue its circulation? We know that the surface of these patches of ulcerative stomatitis is dead structure, and we also know that death of individual parts of the body is caused by the cessation of nutriment, the latter not always due to arrest of circulation in the capillaries, and therefore presumably not due to pressure only—witness the rapid sloughing in spinal myelitis; we have no proof in these cases of primary arterial thrombosis and no indication pointing in that direction; we also know that inflammatory disturbances of nutrition extend so rapidly that they may lead to arrest of vital changes in the tissue before stasis has occurred in the capillaries. Can inflammation, therefore, commence in the capillaries? And if ulcerative and gangrenous processes do occur before the circulation in the capillaries is fully arrested, it leads to the second question, viz., what part does the nervous system itself take in the inflammatory process; can it be that this process commences as a result of some lesion in the nervous chain between the central ganglia and the periphery? Is the origin of inflammation essentially a nervous one?

ABSORPTION OF THE ROOTS OF PIVOTED TEETH.

By F. NEWLAND-PEDLEY, F.R.C.S. & L.D.S.

It is a matter of common experience that absorption attacks the roots of pivots, and not infrequently specimens are shown in which such a root has become painful, and on being extracted has revealed the pin of the pivot laid bare by the loss of dental tissue. The disease is generally classed as absorption, and doubtless this is

correct in many instances ; but a few days ago (Feb. 7th) a case occurred to me which suggested a different origin for some of these lesions. A medical practitioner came to me complaining of a central incisor root that had been prepared for pivoting by Mr. Samuel Rymer seventeen years ago. A gold tube had been affixed by amalgam, but the patient had worn a denture instead of a pivot. The root had been free from pain until the present time, but now a sharp periostitic attack had set in. I tried the usual palliative treatment, but within a day or two it ended in extraction. The stump showed a mass of inflammatory lymph near the apex, and



under this there was an area of rough cementum, in the middle of which was a small dark spot. A very fine probe could be passed into a circular carious cavity in the apex of the root opposite the termination of the gold tube, and the wall of the cavity was extremely thin, breaking down under slight pressure.

Had extraction been delayed for a time it is probable that the tube of the pivot would have been laid bare, and the specimen classed as loss of tissue from absorption.

The accompanying drawing (slightly enlarged) illustrates the appearance of the stump after extraction.

A CASE OF EPITHELIOMA OF THE GUMS.

Reported by J. PERCY SMITH, M.R.C.S., L.D.S., Eng.,
House Surgeon, Dental Hospital of London.

Mrs. R— M—, æt. 64, applied at the hospital for advice under the following circumstances.

For the last three years the patient had worn a lower denture made of dental alloy with vulcanite wings carrying three teeth on either side ; the case has never been perfectly comfortable on account of its cutting into the gum immediately over the alveolar ridge on the left side of the mouth, directly behind the first bicuspid. Three months ago the denture was discontinued on account of the severe pain occasioned, and it has not been worn since. The ulcerated portion of gum not healing but rather extending, and the pain gradually becoming worse, the patient sought advice at the hospital on January 20th last.

On examination, a deep sulcus was seen commencing immediately behind the left lower first bicuspid, and extending across the reflection

of mucous membrane into the tissues of the cheek ; the edges were indurated, there was no exposure of bone, and no stumps could be detected. There was a good deal of fœtor, but no enlarged glands in the submaxillary region. The patient was somewhat emaciated, and stated that she had been gradually losing flesh for some time.

Treatment.—The case was referred to the Middlesex Hospital and placed under the care of Mr. Hulke. It was decided to operate, and Mr. Hulke having made an incision through the cheek, about an inch long, from the angle of the mouth in the direction of the lobe of the ear, extracted the first bicuspid, and then with a fine saw, bone forceps, and gouge, removed a considerable portion of the alveolus and body of the jaw. The prognosis is bad, but sufficient time has not elapsed to show how far the operation has been successful.

Remarks.—The case is of interest to dentists as bearing upon the irritation which may be produced by a badly-fitting artificial denture. Serious ulceration of the mouth is very commonly met with as the result of the undue pressure of dentures, but the determination of malignant disease from this cause is comparatively rare. The materials of which this particular plate were made had probably nothing to do with the lesion, and the cause is to be attributed entirely to pressure. The question of how far the irritation could have been controlled at an early stage by proper treatment is interesting but problematical.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE first meeting of the Session 1889-90 was held on the 4th ultimo, at the Society's rooms, 40, Leicester Square. This being the occasion of the delivery of the President's Inaugural Address, more than the ordinary interest attached to the proceedings, and there was a large attendance of members. Mr. HENRY E. SEWILL, M.R.C.S. and L.D.S.Eng. (President), was in the Chair.

The minutes of the last meeting having been confirmed and other formal business disposed of, the PRESIDENT called upon Mr. D. Hepburn for a "Casual Communication."

Mr. D. HEPBURN related a case bearing upon the position of an impacted lower wisdom tooth in relation to the second molar. The specimen exhibited illustrated three points of interest, viz., the horizontal position of the wisdom tooth ; the deep depressions

between its fangs without actual bifurcation which locked it so thoroughly to the alveolus ; and the deep cavity of absorption, caused by pressure, on the posterior surface of the second molar tooth. He cited this case because he thought it illustrated the advisability of not always persevering in an attempt to remove a tooth which did not yield to the ordinary means. When the patient consulted him six months ago, he was not successful in an attempt to remove the wisdom tooth with an elevator under nitrous oxide gas and, although considerable inflammation ensued for a time, he allowed it to remain until a few weeks ago, when he removed the second molar and subsequently the buried wisdom tooth. The specimen clearly showed that any attempt to remove the wisdom tooth, without having first removed the second molar, would have failed.

The PRESIDENT said that, as members would be in a better position to offer remarks after seeing the specimen, he would call upon Mr. Ackery, who had a communication to make, and meanwhile the specimen could be passed round, after which he should be pleased to hear any comments upon Mr. Hepburn's case.

Mr. ACKERY said that the case which he had to bring before the Society was one of unusual accident in connection with the extraction of a tooth. When the patient first applied to him, he observed a fistulous opening opposite the apex of the first lower right bicuspid ; this tooth showed no sign of periostitis, but there was an amalgam filling at its distal surface, and suspecting that it might be the cause of the fistula, he removed the filling and came upon an unfilled and stinking canal. He tried but failed to force any medicament through the fistula ; finally he filled the canal and tooth. The discharge still proceeded, which led him to think that the second bicuspid might have something wrong with it, and he treated that. One of the first molar stumps was present and showed slight periosteal mischief ; that was also treated. Finally, the bicuspid and the stump were removed. Then the patient passed from under his observation for a time. In 1887 she again attended, and told him that a piece of black stopping had appeared, and made its way through the opening of the gum. Immediately after that the fistula healed. On examination, the foreign body was shown to be a piece of the blade of a lower hawk's-bill stump forceps, about $\frac{3}{16}$ in. in length. The history of the case was, that in 1878 or 1879 an attempt had been made to remove the first right lower molar, under gas. The tooth had been broken, and gas was again administered, when the patient thought

that the whole of the tooth had been removed. Subsequently, however, a stump appeared at the surface, but, causing no pain, was allowed to remain until Mr. Ackery removed it in 1886. Some years prior to this a gathering had appeared and broke. The evil persisted until after the removal of the stump and piece of forceps, so that the latter had been there for seven or eight years.

The PRESIDENT remarked that the case which Mr. Ackery had mentioned seemed almost unique. He had no doubt that some members would have some remarks to make to add to the interest of the record. There were a considerable number of tooth extraction accidents reported in the *Transactions* of the Society, and he thought that all accidents should be recorded, especially for the advantage of young practitioners who frequently came in for a good deal of undeserved blame in such cases. In his own early days he had himself had such unpleasant experiences.

Mr. BOYD WALLIS presented to the Museum models of a congenital cleft palate, the first model showing cleft of velum, a smaller cleft existing posterior to the one shown in model. The second model showed the mechanical remedy, *in situ*, adopted when the patient was 8 years of age, the same obturator being worn at the present time—February 4th, 1889—the patient being about 25 years of age. Mr. Wallis also exhibited models of a nose and an ear made of celluloid; these artificial reproductions showed the facility with which the most intricate designs can be reproduced in celluloid, and by the celluloid injector invented by Mr. Wallis. He further exhibited the four central upper incisor teeth of a young lady, aged 18 years, whose teeth were sadly affected by pyorrhœa; these teeth were removed with ease by the patient herself, the remainder of the teeth in the jaws being in a loose condition. The patient was robust and healthy looking, the parents equally so; but the latter both suffered from gout, and had both lost their teeth from a similar cause.

The PRESIDENT then called for any remarks upon Mr. Hepburn's communication.

Mr. WALTER H. COFFIN said that in a similar case in his own practice, he had extracted and replaced a second molar with perfect success, and he believed that Mr. Arthur Underwood had also done so. It was in such cases as these, he thought, that re-plantation might be legitimately and wisely resorted to. As Mr. Hepburn had not mentioned that he re-planted the tooth, he gathered that he had

not done so ; probably there were special reasons for not adopting this course.

Mr. W. A. HUNT (Yeovil) stated that he had also extracted a second molar for the purpose of removing a mal-placed wisdom-tooth, and had replaced the molar, and had not had any untoward results. He mentioned, also, another case of involuntary extraction, where it was necessary to take out the first bicuspid in order to allow room for the second molar to develop. The second molar had been arrested in its development, owing to the progress forward of the first molar. He found that it was impossible to separate the first and second bicuspids because they both occupied one common socket and were firmly united, so that, *nolens volens*, both teeth had to come out.

Mr. BETTS mentioned that he had removed a second molar to make room for a wisdom tooth, which after a while took up a very fair position, although originally it appeared to be horizontal. He had also recently re-planted a molar tooth.

Mr. D. HEPBURN, in answer to the President, said that he had no reply to make, except that his reason for not resorting to re-plantation was that his patient's desire was to have as many teeth removed as possible.

Mr. BOYD WALLIS being asked as to the kind of celluloid machine used in making the artificial nose, replied that he had it specially made for the purpose ; it was a cylinder surrounded with asbestos.

Mr. STORER BENNETT, referring to the length of time that Mr. Wallis's patient was able to wear the artificial velum, remarked that he had had the opportunity of seeing a case that had been worn for more than 40 years. It was made by the late Mr. Nasmyth, and was a gold upper plate with a hinge and a spiral spring at the back. He mentioned this merely as an example of extremely good work done at a time when the means of carrying out mechanical work were very inferior to the present.

Mr. WALTER H. COFFIN showed the well-known "self-pouring coffee-pots" for use in the operating room, for hot and cold water. Mr. Coffin remarked that in scientific language the energy expended in pressing the piston lid was in exact ratio to the quantity of water desired to be raised and displaced from the pot. He also referred to the question of platinum plating, which had in a previous session been brought before the Society. He had had many articles and

instruments plated by the method, which he showed to the meeting. They were very bright, and proved the satisfactoriness of the process so long as the articles were exposed to the ordinary atmosphere, and not rubbed; they withstood the action of oxyphosphates and phosphoric acid, but with corrosive medicaments, such as iodine, he regretted to say that it was not a success. Strong iodine would eat through the platinum to the iron underneath. Mr. Coffin also showed some small discs of amadon, which were prepared by punching out with a sharp punch. He found that these could be most nimbly inserted into small cavities, and when warmed on a tray would dry a cavity almost as effectually and with less pain, than a hot air syringe. He also used discs of Japanese bibulous paper prepared in the same way. For these very useful additions to the list of absorbent materials already at their command, he was indebted to his brother, Mr. Harold Coffin.

Mr. W. A. HUNT (Yeovil) thought that such small communications as Mr. Coffin had made, were very useful to the Society, and, therefore, he ventured to make another. For many years he had been in the habit of using what was known as a "Norwegian Jug," its original purpose was to keep grog hot—and it *did* keep it hot—he found it very useful for keeping water hot in the operating room.

Mr. STORER BENNETT wished to mention in connection with the subject of platinum plating, that he had a pair of forceps made of nickel—not nickel plated—which were extremely resistant to any medicaments; they withstood the action of iodine and strong tincture of iron, although the iodine just stained the forceps it might be washed off; as dressing forceps they were therefore very useful.

Mr. ASHLEY BARRETT showed an instrument which he thought combined two or three useful features. It was a mouth opener and a gag in one, designed to be used after chloroform had been administered. It was extremely powerful, and he claimed that when inserted between the teeth, the mouth could be rapidly opened. It had a flexible pad on the hinge which adapted itself to the jaws and so prevented the instrument from slipping.

Mr. W. H. Coffin asked if it could be used with an ordinary nitrous oxide gas apparatus.

Mr. ASHLEY BARRETT said that it was intended to be used immediately after a patient had taken chloroform; after the administration of a small quantity of chloroform the mouth could be forcibly opened.

Dr. DUDLEY BUXTON pointed out the extreme danger of commencing any operations after a "whiff" of chloroform had been administered.

Mr. ASHLEY BARRETT was not advocating a mere whiff of chloroform, but only such a moderate administration as to produce anæsthesia without muscular relaxation.

The PRESIDENT then read his

INAUGURAL ADDRESS.

Having acknowledged the honour conferred upon him by his election to the Presidential Chair, a position which he regarded as the highest compliment that the dental profession had to offer, he proceeded to say that the sole reason for the existence of the Odontological Society was the pursuit and promotion of dental science. Although questions still unanswered, and problems still unsolved, were of the highest interest, they had become by this time well worn; yet, notwithstanding all that had been done, there remained unfinished tasks sufficient to satisfy the scientific ardour of the most zealous. Among the unsolved questions he considered those concerning the etiology of dental caries at once among the most difficult and most interesting, demanding far-reaching research. The fact of the diminishing development of the organs of mastication, from the anthropomorphic apes upwards, demonstrated that evolution was an agent; so also the fact that dental characteristics were transmitted from parents to children proved that heredity played its part; further, the power of hereditary disease to influence the development of enamel and dentine was a matter of experience. From these facts it seemed evident that to produce sound dental tissues their energies must, above all, be directed to the improvement of the race. Asserting that disease was no necessary accompaniment of civilization, he was of opinion that the time must surely come when every zymotic disease should be as unknown in civilized lands as the plague; when scrofula and rickets, and all diseases, the products of darkness, filth and starvation, should no longer exist; and when ignorance and sickly sentimentalism should no longer be allowed to stand in the way of prevention of scourges like small-pox and syphilis. They were, however, more urgently concerned with the present than the future, and if they could not materially help towards the production of sound dental tissues, they could at least do much to prevent their decay, and do more to repair them when decayed. He suggested

that the chemistry of the oral fluids in disease was a department of research which would well repay more thorough inquiry than has yet been bestowed upon it, and pointed out, also, that while it was hardly possible that the established principles of treating caries could be overthrown, yet there was room for improvement in instruments, stoppings, and methods of working them. A thorough research into the metallurgy of gold might lead them to the production of foils capable of more rapid and certain manipulation than those at present in use. But of much greater importance than the improvement of gold he held the improvement of amalgams and all the class of plastic fillings. Gold fillings for carious teeth, like warm winter climates, must be considered as luxuries beyond the reach of many; they were too costly; besides, gold fillings involved the infliction of pain and fatigue not to be borne by every one. An ideal filling would not be metallic. It would be a cement, which, applicable in a condition thoroughly plastic and adhesive to the walls of the cavity, would, on setting, approximate in its character to dense enamel. The advances which had been made in the preparation of non-metallic cements went to show that it was not beyond the power of chemistry to produce such a material. With reference to the inflammatory conditions occurring within and around the teeth, these were essentially the same in all vascular structures. It seemed to him questionable whether it might not be better to destroy a diseased pulp and extirpate it rather than attempt to save it, seeing how easily the operation might be performed and how well the teeth endure after antiseptic treatment. Turning from caries, Mr. Sewill alluded to *pyorrhœa alveolaris*, a disease the etiology and pathology of which they were in all but complete ignorance. He had formed the opinion that cases of this affection might be grouped into three classes, and that they were closely analogous to varieties and diseases of the hair commonly classed under the term "baldness." In the first group there was little or no inflammation or discharge until the final stage—these occurred mostly in robust, healthy, although very often gouty, individuals, having massive well formed jaws and teeth free from caries; these cases were similar to those of simple premature baldness. In the second group, there was present general or partial debility, such as are so often associated with *alopecia*. The third group resembled *sycosis*—these were the cases of true *pyorrhœa alveolaris*.

Having briefly suggested "antisepticism as applied in dental

surgery" as a subject deserving special attention, Mr. Sewill dwelt at some length upon the wonderful progress in general medical science that had been made during the present century, and the rapid steps by which chemistry had attained a position that found us no longer in wonder or surprise at the artificial production of any definite chemical compound in the organic world in the laboratory. These advances in the path of scientific knowledge made the future of dentistry bright with the promise of a like development. Science, by which alone such achievements as he had alluded to had been made facile, could advance only by means of observation and experiment; but observation and experiment must be exact. Healthy scepticism was the only safe habitude of the scientific intellect; it was that which every explorer worthy of the name cultivated for himself and expected to find in others. There was no shame in occasional error—the pithy phrase of the American Minister in his farewell speech at the Mansion House applied as forcibly to the pursuit of science as to any other pursuit:—“The man who makes no mistakes does not usually make anything.” For great results, the worker must not be perpetually asking himself what was the good of this or that fact; to elicit truth must be his main desire. He must be satisfied with the reflection that there never was yet established a single fact, useless and isolated as it may first appear, which did not in the end fall into its place as an indispensable atom in the sum of knowledge upon which advancement depended. Great genius could neither be tempted by wealth nor turned from its bent by anything short of starvation and death. How many martyrs to science the years produce—men whose lives were silently sacrificed in the service of humanity—the world knew not, nor did it seem to care. Whilst, however, genius of the highest order was very rare, talent and industry were comparatively common, and the desirability of endowments by individuals, and by the State when public opinion demanded it, to enable investigation to pursue their lines of research, free from the cares of bread winning, was becoming more and more forcibly brought home to them. In referring to the fact that Englishmen had always held a foremost place in the world of culture and scientific attainment, Mr. Sewill remarked that it was a matter for congratulation that ever since dentistry attained a recognised position as a profession in this country, it had always included in its ranks a due proportion of men of general scientific reputation, and that, besides those among them

at the present time who were deserving of distinction, they claimed among the limited number of their Society, no fewer than three members whose labours had gained for them the Fellowship of the Royal Society. Those who had entered the profession at the present time, possessed advantages for acquiring knowledge and for pursuing science greater than ever before existed ; and in conclusion he hoped that some fruits of their labours might be laid before the Society during his time of office.

Announcements were made of forthcoming papers, and, after the usual votes of thanks to the contributors of the evening, the meeting terminated.

DENTAL STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

An ordinary general meeting was held on Monday, February 11th, 1889, WM HERN, Esq., President, in the Chair.

The SECRETARY read a letter of greeting from the secretary of the Students' Society of the New York College of Dentistry.

The PRESIDENT announced that the Council had decided that in future readers of papers might print diagrams in the Society's *Transactions* at the Society's expense, the cost to be limited.

On "Casual Communications" being called,

Mr. ROUW presented a first temporary molar with the crown of the bicuspid grasped between its fangs, both having been extracted together.

Mr. SMITH presented a lower molar with a portion of alveolus attached. The alveolus had been bruised in a previous unsuccessful attempt to extract the tooth, and had necrosed. He also showed an old style pivot still firm in the root which had been cast off. It was fixed with silk and mastic, and had been in place 18 years.

Mr. FORSYTH showed models of the mouth of a boy aged 13. One wisdom tooth was *in situ*, that of the opposite side being in process of eruption. The boy had cut his first permanent molars before he was four years old.

Mr. DAY showed a model with five lower incisors.

Mr. COHEN brought forward a model showing congenital absence of laterals. The patient was 22 years old.

Mr. WOOLF then read a paper on

THE ADAPTATION OF GOLD AND RICHMOND CROWNS,

of which the following is an abstract :—

The author in opening the paper, said he should endeavour to make the *modus operandi* as clear as possible, in order to show that any who are interested in this branch of dental work and intend to make use of this method themselves, can do so with very little trouble. He then dwelt for a short time upon the advantages of both methods.

Then followed a full description of the details necessary for carrying out an operation of this kind, which was made interesting by numerous drawings, models, and instruments. In referring to the shaping up of the tooth for the band, he said that the success of an operation does not depend so much upon the total removal of the enamel, as upon so perfecting the work that no sharp corners or bulges may exist, which would prevent the band slipping into its proper position.

In referring to the solder, he mentioned several cases where it had turned colour; but thought that although even pure gold will sometimes tarnish when in the mouth, yet it could be prevented in the majority of cases by using as good a solder in comparison as the metal used for the crowns. If an objection were raised on account of metal caps on bicuspid teeth being unsightly, then he suggested that an ordinary flat tooth should be adjusted after the style of the Richmond Crown.

In speaking of the different opinions about whether it is necessary to have a small hole drilled in one of the cusps, through which the surplus cement may escape or not, he found from the little experience he had had, that however well the band appeared to fit, there was always some cement squeezed out under the gum before it was driven thoroughly home.

The discussion was opened by the PRESIDENT who advocated the use of steel dies. He found those sold at the depôts to have too pointed cusps, and therefore he ground the cusps down on the lathe. He had found a difficulty in grinding down the collar of a gold crown, from its tendency to collapse. To obviate this, he fills the collar with Stent's composition, and grinds them together.

Mr. DOLAMORE thought that, in a carefully adjusted crown, the root was more likely to fail from periosteal mischief than from its

decaying, and he believed the collar of the Richmond Crown would only tend to expedite this.

Mr. H. LLOYD-WILLIAMS mentioned that arrangements were being made to give students more facility for making gold crowns in the workroom of the hospital. He thought it better to use two different kinds of solder, seeing that soldering had to be done at different stages. He objected to the Richmond Crown on account of the gold band in front, which was liable to show.

Mr. RILOT objected to the term "Richmond" Crown, as he did to the term "Riggs' Disease" for "Pyorrhœa Alveolaris." He would like the term "Porcelain-faced Gold Crowns." To obviate fracture of the porcelain front he built up the gold over the cutting edge of the tooth.

Mr. SMITH thought that gold crown work would not take a leading place in future dental practice, for, as patients become more enlightened, they will go to the dentist before the mischief has gone far enough to make crown work necessary.

Messrs. HARSANT, READ, PREEDY, and DUNLOP also spoke.

Mr. WOOLF then replied to the various speakers.

After thanking Mr. Woolf, and the gentlemen who brought forward "Casual Communications," the PRESIDENT announced that at the next meeting, on March 11th, Mr. COHEN would read a paper on "Neuralgia."

The proceedings then terminated.

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.

THE last Smoking Concert of the session was held on Wednesday, January 30th, at Hummum's Hotel, Mr. MORTON SMALE occupying the chair. A lengthy and excellent programme was got through and a very pleasant evening passed.

The Musical Society performed selections from "Pinafore," the principal parts being taken by Messrs. Hepburn, Lloyd-Williams, Knowles, Wheatley and Barrett.

Mr. J. Smith Turner, by special request, gave "Good St. Anthony," and Mr. Hepburn "A Medical Student's Dream."

Besides these, songs and recitations, &c., were contributed by Messrs. Arliss, Bright Brothers, Knowles, Wheatly, Egerton Hall, Garcia, Davis, Rae and Green. The proceedings terminated by the singing of "Auld Lang Syne," and hearty cheers for the chairman.

EXTRACTS.

BROMIDE OF ETHYL

It has been generally supposed that bromide of ethyl is a more dangerous anæsthetic than any of those in ordinary use. The contrary opinion however is held by Dr. L. Zuman Thorn, a German investigator, who recently published his views in the "*Therapeutische Monatsschrift*."

The most interesting passages of Dr. Thorn's article were printed in the October number of *L'Odontologie*, from which we translate them for the benefit of our readers.

"Bromide of ethyl acts more rapidly than chloroform, presents less ill effects, rarely causes vomiting when absorbed in small quantities, seems to be relatively less dangerous, and ought therefore to be used in painful operations of short duration.

"I have employed it since October, 1883, in hospital and private practice as an anæsthetic for extraction of teeth and roots, removal of small superficial tumours, opening of abscesses, incision of boils, treatment of sinuses in carious bone, neurotomies of easy execution, and often in accouchements. I have used it thus in about 130 cases.

"I use bromide of ethyl by means of a chloroform face-piece, covered by a thick flannel or a double piece of thick knitting. This face-piece is not, as with chloroform, held half-an-inch or an inch away from the face, but placed quite under the nose and mouth, and sprinkled over twice or thrice with a sufficient number of drops until it is very wet. When this result is arrived at, which requires about two or three drachms and rarely up to six or eight, a sufficient state of torpor for a short operation is reached, that is to say, a slight sensation of dizziness with a marked diminution, and often a total suppression of the sense of pain, whilst at the same time ordinary sensation and consciousness generally persist. Patients will reply most of the time to questions, open the mouth if required, and feel the contact of the instrument, knife, scissors, &c., as a dull pressure, most of them calmly bearing the pain without stirring. In the same way cauterization of recent wounds, so painful when done with chloride of zinc in strong solutions (8 to 10 per cent.), causes but little pain, or even none at all, when the patient inhales bromide of ethyl.

"Sometimes, but not always, in slight administrations, sensation

to pain is completely abolished, so that the patient regards the operation with pleasure, or when it is over, asks if it has commenced.

"The awakening after a slight narcosis and the return of the sense of pain come on always very quickly. One must make haste to operate, and have prepared everything necessary before the administration. In every case the anæsthesia lasts much longer than with nitrous oxide gas, *i.e.*, it lasts some minutes instead of some seconds.

"In slight operations which take a long time, and in serious ones, chloroform is preferable.

"Bromide of ethyl has no action on drunkards, nor on those who are not strong enough to endure the face-piece for several seconds near their nose; in these cases likewise chloroform must be used.

"Bromide of ethyl might prove dangerous in cases of heart disease, kidney disease, and in cases of the absorption of large quantities of the drug.

"At the out-set I tried it equally in small and large operations, and I have many a time given two or three ounces, and one time even as much as five ounces, but since the two cases of death which are on record, I have given it up in these cases.

"However, I noticed once, after the extirpation of a scrofulous swelling (? bronchocele) under bromide of ethyl, a sharp attack of bronchitis, transforming quickly into the mucous stage, this, in spite of a complete cure and perfectly aseptic treatment. The temperature rose rapidly to 104° Fahr. But I noticed the year before a case of acute bronchitis after the removal of an ovarian cyst under chloroform, in spite of the healing of the wound and strictly aseptic treatment. And in the same way other surgeons have noticed acute catarrhal affections after operations under chloroform.

"In order to preserve bromide of ethyl, Longaard and Trouba advise the addition of alcohol. For my part, I have often anæsthetized with it when two or three months old, and I have never found anything amiss with it on that score. A bottle, three and-a-half months old, possessed all its normal qualities. Air alone has no influence on it (this pre-supposes that the air be dry); it is not so, however, when acting in conjunction with light.

"*Theory of effect.* In order to produce anæsthesia, the face-piece must be held quite close to the patient's face, and plentifully sprinkled once or several times at short intervals with bromide of ethyl, till the patient feels a very decided sense of dizziness (*vertigo*). It would seem from this that the mixture of bromide of ethyl with atmospheric

air must be more concentrated than in the case of chloroform to produce the desired effect.

"But it seems also that the mixture of bromide of ethyl vapour with air *may* be more concentrated than in the case of chloroform, for whilst, according to Snow, Lallemand, Penin, Daroy, chloroform may be mixed with air to the degree of 4 or 5 per cent. in anæsthetizing mammals without ill-effect, a mixture of 8 to 10 per cent. is constantly immediately fatal, whereas in the case of bromide of ethyl, according to Richardson, its mixture with air must be of a strength of 8 to 10 per cent. to act effectively as an anæsthetic. This shows that vapour of bromide of ethyl is less poisonous than that of chloroform.

"The action of bromide of ethyl seems to be such, that, with the majority of patients, it first of all does away more or less with sense of pain (analgesia), and it is only by constantly adding to the agent drop by drop, that sensibility and sense of touch are done away with, whilst muscular rigidity often does not disappear at all, from which it is evident bromide of ethyl cannot be used for reducing dislocations. Quite on the contrary, it often produces during a prolonged narcosis, a remarkable cataleptiform rigidity of muscles which disappears with the narcosis. So, also, a dilatation of the pupils which is often observed during the narcosis, like that produced by atropine, disappears without any trouble. I have often observed dilatation of the pupils from the beginning of the narcosis, and have never known any untoward results; while a considerable enlargement of the pupils during an administration of chloroform is constantly regarded as an alarming symptom. Sensation of pain ordinarily disappears much more quickly than in chloroform narcosis, during which a total loss of consciousness usually comes on before there is any notable diminution of the sense of pain.

"According to Broome and Nazza, who have made experimental researches on the physiological action of bromide of ethyl, this agent acts more rapidly than chloroform or bromoform, but it is more easily eliminated, and consequently its action produces less inconvenience. It is less poisonous than bromoform since a subcutaneous injection of it is poisonous only when in a quantity corresponding to the proportion of '17 gramme to 100 grammes of body-weight, whilst bromoform is when in the proportion of '15 gramme.

"During the narcosis the blood pressure drops from twenty to thirty millimetres, and soon rises again at the end, while respiration

resumes the normal. Bromide of ethyl, like bromoform, diminishes the irritability of the meninges.

"For children it has no advantage over chloroform. Sometimes analgesia was complete with a dose of five to thirty grammes ($\frac{1}{8}$ to 1 ounce), sometimes sense of pain was very considerably diminished, say to a quarter of the normal.

"Sometimes the patients cry continually during the administration, before the knife or forceps have been applied, and if they are asked after the operation why they cried, they are very astonished the operation is over and cannot give any account of what they have done ; they are then in a half sleep.

"Small doses of cocaine (by injection) before administration of bromide of ethyl are equally inoffensive as those of morphine before chloroform.

"In an administration of bromide of ethyl, which lasts a short time, everything is much more simple (than with chloroform) the operation is very easy to manage in the surgery without the aid of a special administrator ; the return to consciousness comes quickly and easily, and the feeling of illness which so often prevents patients from leaving the couch or the surgery after a short inhalation of chloroform is very rare.

"To sum up, the advantages of bromide of ethyl as an anæsthetic may be grouped thus :—

1st. "It is very useful for operations lasting from several seconds to several minutes.

2nd. "Its use necessitates no costly or cumbrous appliances, but simply a chloroform face-piece.

3rd. "In small and short operations the requisite degree of analgesia is usually obtained without loss of consciousness.

4th. "Recovery comes on very rapidly. Vomiting and other weakening effects are rare with small doses.

5th. "In sufficient doses of ten to thirty grammes ($\frac{1}{3}$ to 1 ounce) it seems less dangerous than chloroform, and than strong injections of cocaine, and not more dangerous than nitrous oxide or than admissible doses of cocaine.

6th. "It can easily be employed without extra medical assistance, and for patients who move about."—*Zahnärztliches Wochenblatt*.

* * From certain passages in the above, it seems Dr. Zuman Thorn advocates the use of chloroform in all cases where ethyl bromide is inadmissible. In opposition to this, however, the consensus of English opinion has clearly decided

that chloroform is never, as a general rule, admissible for dental operations. This decision has been arrived at on account of the inordinately large number of deaths under chloroform, administered for the extraction of teeth. The high mortality in these cases is explained by the fact that when the patient is in the sitting posture the danger from chloroform is largely increased. H. B.

IMMEDIATE INSERTION OF AN ARTIFICIAL LOWER JAW AFTER REMOVAL OF THE NATURAL ONE.

A VERY interesting case is published in the November number *L'Odontologie* of the immediate insertion of a new lower jaw after removal of the old one for necrosis. The patient was a young man, age 21, who was admitted into the hospital at Lyons on 3rd December, 1878, and whose lower jaw, after six years of trouble from a tender tooth—evidently a pulpless one—had become necrosed almost in its entirety. Numerous sinuses formed both inside and outside the mouth, some of them being in the neck—a short distance from the clavicle. The patient acquired mucous râles all over the extent of the lungs, his cough became worse and worse, and he was hourly expected to begin to show symptoms of purulent infection, as the pus, which was poured out in great quantity, was almost all swallowed.

Létievant operated on the 14th December, 1878. This presented no great difficulties. All the body of the bone was lifted out with forceps, leaving the periosteum behind attached to the muscular tissue around. The periosteum had to be artificially stripped off from the ascending rami. On the left side all that was left of the lower jaw bone was the condyle and the coronoid process connected together by a portion of the ascending ramus; on the right side all that was left was the condyle cut off at the level of its neck. After the wound was cleansed, M. Claude Martin inserted into the periosteal gutter a counterfeit lower jaw made of rubber. He had previously taken an impression of the mouth, and made the rubber jaw in its entirety, and simply had to trim it down at the time of the operation.

The lower jaw was attached to an upper palate plate by spiral springs, with swivels, in the ordinary way, and the springs were made sufficiently strong to slightly tend to open the mouth, as the mouth could be closed to some slight extent by muscular action, but, there was nothing to help open the mouth but the springs. In the middle line the rubber jaw was divided with a saw, and the two halves

held together by a spring controlled by a button, which allowed of its more easy introduction into the mouth. The fixing of the apparatus only took five minutes. The results of the operation were simple. The apparatus was well borne. After the first day after the operation, the patient ate better than with his diseased jaw. Excepting for a bad attack of erysipelas which came on five days later, and spread over the whole face and hairy scalp, and retarded progress for some time, the patient made an uninterrupted recovery. New bone was laid down from the periosteum beneath and around the rubber jaw: the various movements of the jaw re-established themselves. The rubber jaw was reduced from time to time to allow for deposit of new bone. A new apparatus was at length made to better adapt itself to the new bone; it was made intentionally heavy, and the springs which united it to the palatine plate were set farther forward than usual in order to obtain a propulsion of the lower jaw, forwards and downwards, and to direct the ossification of the chin in those directions. A third was finally made smaller than any of the preceding ones and without springs. The operator remarks that the apparatuses might be compared to Meckels' Cartilage, which directs the process of ossification, and in so far as it effects this, its function diminishes, until it disappears altogether as soon as the new bony jaw can go alone in safety.

At the time of the patient leaving the hospital, ordinary sensibility of the skin of the chin had completely returned, whereas it had been for some time very much blunted.

Ten years after the removal of the original jaw there was no contraction of the upper jaw observable.

This gratifying result was attributable to the mechanical action of the artificial jaw, in keeping the parts in a normal state of extension during the healing process, as in the absence of such help there is deformity, caused by contraction after excision of the lower jaw, though in this connection Bryant remarks:—"The amount of regeneration of bone will depend greatly on the state of the periosteum during the removal of the sequestra. If this be healthy, and if new bone have already formed prior to operation, a very perfect reproduction of the portions of jaw removed may take place; in fact, complete reproduction of the whole lower jaw, body, rami and epiphyses, though in a somewhat rudimentary and imperfect form, may follow its removal for phosphorous necrosis. . . . Should no new bone have formed before the operation, a dense fibroid cicatricial structure will replace the lost bone;" and, again, in another

place he says, "When cicatrization is complete, a dense mass of fibrous tissue is formed in the place of the jaw, and comparative little deformity results." But here it is not quite clear whether he means after a total or only a partial excision.

APPLICATION AND USES OF THE RUBBER DAM.

A paper read before the Memphis District Dental Society by DR. H. T. LYNCH.

THAT all dental operations should be performed with a view toward accomplishing the best results and the most perfect operation, we presume no dentist will deny.

While we feel we should take into consideration the comfort of the patient, both during and after the operation, we should not allow our actions to be governed by his temporary inconvenience to such an extent that it will in any way affect the final results.

For instance, in filling teeth where pain is inflicted, we should not be controlled by the pleadings of the patient for temporary relief, to the detriment of his future benefit, and the durability of the operation. So, too, in the use of napkins, bibulous paper, spunk and the rubber dam: to all of which the patient will object, only thinking of his temporary comfort. However much the patient may object, no dentist will deny the necessity for keeping the cavity dry during the operation of filling the teeth. If, then, it be considered necessary to exclude the moisture in such operations, and to insert our fillings when the cavity is dry—or as nearly so as it is possible to make it—the next question arises, how is this result best accomplished? Is it by the use of bibulous paper, napkins, etc., or the rubber dam? That the rubber dam is superior to all other appliances for the purpose used, we believe all dentists will agree.

We frequently hear dentists speak of inserting large gold fillings by the use of napkins or bibulous paper, giving as an excuse that they can work faster, and that the patient objects to the use of the dam. Admitting the patient does object to the use of the latter, does the operator not know that it is impossible to keep the cavity dry during prolonged operations in any other way, and that he is only governed by his sympathy, and yielding to the wish of the patient for relief from a little pain or inconvenience, rather than guided by a desire to accomplish good results?

Do not all dentists know that the moisture from the breath, alone, is sufficient to destroy the cohesive qualities of gold, and thereby

render the operation imperfect? To illustrate this, let any one stand ten or twelve inches distant from a window-pane, when a few blows from his oral cavity, on its surface, will show how much moisture may be deposited even at that distance. And there is certainly much more when in actual contact with the mouth. Not only this, which is the least cause for alarm, but the constant fear that the saliva will force its way into the cavity, thereby rendering the filling imperfect, it seems to me is sufficient to convince any operator that he ought to use the appliance which will most successfully exclude the moisture during the operation.

Some dentists claim, should the filling get wet, they can cut away a portion of the gold and proceed with the operation. Why bring about such conditions? Why not apply the rubber dam in the first place, save time, and avoid all such danger? So far as trouble and loss of time is concerned, we believe it may all be attributed to a lack of knowledge as to how to adjust this appliance. But few cases should require more than five, and rarely over two or three minutes for this operation. To adjust it on the anterior teeth. First, to render the work easier, where the teeth are crowded, draw a piece of floss silk, well waxed, between them. After making the required number of holes, stretch the dam sufficiently tight to enable you to gradually force it between the teeth. If it cannot be done in this way, place the spaces in the dam as far as possible between the teeth, and complete the operation by forcing it down with floss silk. Using floss silk, place a thread around the crown of each tooth enveloped, grasping the ends firmly with one hand, and with a flat burnisher gradually force the dam to its proper position, around the necks of the teeth. After which, if necessary to hold the dam in position, or more perfectly exclude the moisture, secure it with a thread around only those teeth necessary to facilitate the operation. In a great many cases this will be unnecessary, as the tension of the dam, aided by the peculiar shape of the teeth, will be sufficient to hold it in its proper position. In other, and in fact, in the majority of cases, it will be necessary to secure it only on the tooth, or teeth operated upon; hence, avoiding the little pain—the only one of any consequence caused by the use of the dam. To adjust the dam over the molars, and sometimes the bicuspid: After making the required number of holes; in which you will be governed by the tooth, or teeth to be operated upon, and the location of the cavity; if in the crown, only two, and many times but one is necessary; if on the

buccal, or lingual surface the same rule will apply ; if on the proximal surface it will be necessary to place it over two, sometimes three, and in many cases four teeth in order to keep the dam out of the way of the operator and give free access to the cavity. Stretch the dam over that portion of the clamp which is to envelope the tooth ; then, with the clamp on the forceps (clamp-forceps), the dam folded around them, place the clamp on the last tooth back to be operated upon. If the cavity is posterior proximal, on the tooth immediately back of it, holding the loose dam with one hand, with a flat burnisher—or the fingers—gradually draw it forward till it passes underneath the clamp and envelops the tooth. The remaining work is easily completed by drawing the dam forward over each succeeding tooth and, when necessary, securing it around the teeth with floss silk ; after which the upper part of the dam should be held in position, and out of the way of the operator, by the rubber dam holders.

When the operator has no clamps convenient, place the dam first over the anterior tooth, on which it is to be applied, securing it with a thread ; then over each succeeding tooth back till the operation is complete.

The objection is sometimes made that the cavity extends too far under the margin of the gum to apply the dam. To an experienced operator but few such cases will appear, as he can readily find clamps of such shape and strength as will force the gum out of the way, and even under it beyond the margin of the cavity, or to such an extent that in nearly all cases it will exclude more moisture at the point of exposure than any other method. While it not only excludes the moisture, it gives the operator free use of both hands, which is necessary in rapid operating and perfect work.

Some of the non-rubberdamists say that their patients express themselves as being so glad they do not use the rubber dam, as it is so annoying. But do they explain to their patient that their competitor who used the dam did it because he could do his work easier, and perform a more perfect and, to himself and the patient, satisfactory operation ? We fear not. Again, they do not know how many patients go to the dentist of rubber dam fame and say they prefer the use of the dam for various reasons. Only a few days since I had a patient, who had never known the use of this appliance, say she thought it a great improvement for various reasons. Gave as one advantage, "It keeps the operator and patient from breathing in each other's mouth." This statement we can all

readily appreciate, as, not only some dentists, but a great many patients, have a breath, the odor of which will pass through a brick wall and cause a man to faint on the opposite side.

MISADVENTURE AT A HOSPITAL.

AN inquest was held at University College, London, on Thursday evening of last week, respecting the death of Charles Sidney Fletcher, 30, a jeweller, who died on the previous Tuesday at the hospital. The deceased, who suffered from a painful affection of the bladder, entered that institution on Saturday. Mr. John Creswell, house-surgeon, said the deceased was under the care of Dr. Berkeley Hill and himself. Visiting him on Tuesday morning, shortly after ten, the witness found he had passed a sleepless night. To alleviate his pain, he proposed to inject a solution of cocaine, and accordingly wrote the following prescription :—" 20 grains of cocaine in an ounce of water. *Statim.*" The word "*statim*" signified that the cocaine should be dispensed at once—should be immediately supplied to him so that he might inject the poison himself. Beneath this prescription there was another ordering a solution of sulphate of zinc for the deceased ; but the word "*injection*" was added in this case, as well as the word "*statim.*" Having laid the sheet containing both prescriptions upon the ward table, and told the nurse that he wanted the drugs immediately, he was called away to an operation in another ward. He was absent about an hour, when he was informed that the deceased had drunk the cocaine, which was administered by the nurse, and was dead. The Coroner : There is no direction on the prescription-sheet as to how this poison was to be used. Witness : No ; because I intended to use it myself. Caroline Spencer Bradley, who said she had been a head nurse at the hospital over three years, deposed to taking the prescription-paper down to the dispenser at once by Dr. Creswell's orders. She handed it to the dispenser, who remarked, " There are two things here ; one, I think, is a draught." She replied, " I suppose it is, but I am not sure." He gave her the cocaine solution in a measuring glass—an unusual thing—and the solution of zinc in a bottle. She at once gave the deceased the cocaine, knowing nothing of the doctor's intentions, and believing it was meant as a draught. The word "*statim*" to her mind signified that the drug was to be administered forthwith—not merely dispensed immediately. She added that the poison,

being supplied in a glass, strengthened her conviction that it was intended as a draught. Alfred Anderson, assistant dispenser, who had been four months at University College Hospital, and for three years before at Middlesex Hospital, said he construed the word "statim" as signifying that the drug should be administered immediately, and to facilitate this he put it in a glass ready for use. It did not strike him at the time that twenty grains was a large dose to take. Mr. A. G. Pepper, F.R.C.S., who had made a post-mortem examination of the body, said the immediate cause of death was the dose of cocaine. The usual dose was from a fifth of a grain to a grain. This was the first case of its proving fatal in England. The word "statim," as used in the prescription-paper produced, was quite unintelligible in its application unless there was an understood code of signals between the person who ordered and the person who executed the order. The jury returned a verdict of "Death from misadventure," adding that they were of opinion that "in writing the prescription more distinct and clear indications should have been given for the guidance of the dispenser." Further, they were of opinion that the dispenser under the circumstances, seeing that the quantity of cocaine ordered was greatly in excess of an ordinary dose, should not have suggested to the nurse that it was intended for a draught, and, if in doubt, should have referred the prescription back to the writer.—*Chemist and Druggist*.

CHLOROFORM ADMINISTRATION.

At the distribution of the prizes to the students of the Hyderabad Medical School, by their Royal Highnesses the Duke and Duchess of Connaught, on January 25th, Surgeon-Major Lawrie, M.D., Principal of the Medical School, in a short address, referred to the commission appointed last year by the Nizam's Government to make experiments with reference to the effects of chloroform. Dr. Lawrie said the experiments which had been carried out by the commission, consisting of Dr. Hehir, Mr. Kelly and Mr. Chamarette, were, in his opinion, the most important that had ever been made, and had conclusively decided a question which had been in dispute ever since chloroform was first introduced. There was no doubt that the anæsthesia produced by chloroform was best measured by its effect on the breathing, and that when the administration was pushed beyond a safe point, the breathing became embarrassed and then stopped.

The question in dispute was whether chloroform ever affected the heart directly or not ; and this was important in its bearing on the way in which the administration of the anæsthetic should be conducted. The following was the work performed by the commission, as described by Dr. Lawrie. They killed with chloroform 128 full-grown pariah dogs, averaging over twenty pounds weight each. This does not represent a tithe of the experiments they actually performed, which really amounted to several hundreds, as they varied the dose and the method of administering the chloroform in every possible way, and tested the value of artificial respiration in nearly every case by reviving the dogs over and over again after the breathing had stopped, and before the heart ceased beating. What they found was, that no matter in what way it was given, in no case did the heart become dangerously affected by chloroform until after the breathing had stopped. "This," adds Dr. Lawrie, "tallies exactly with my own experience. I have given chloroform as often, or oftener, than any man living, and have never had a fatal case ; and I can state positively that in the 40,000 or 50,000 administrations I have superintended I have never seen the heart injuriously or dangerously affected by it. I take no credit to myself in this matter. I have simply carried out in India the principles Simpson and Syme practised and taught in Edinburgh." In the hospitals attached to their school, chloroform was invariably given with absolute, or, he might almost say, with guaranteed safety, by students, and they were never allowed to examine the heart beforehand, or feel the pulse during its administration. In other places, and in London itself, deaths from chloroform constantly occurred, but provided the administrator could swear he examined the heart and felt the pulse, they were always supposed to be accidental. He, Dr. Lawrie, had no doubt deaths would go on occurring until the London schools, which of course influenced the whole world, either entirely changed their principles and ignored the heart in chloroform administration, or else confined themselves exclusively to the use of an anæsthetic like ether, which, with all its disadvantages, they knew how to manage.—*British Medical Journal*.

WASHING AMALGAM.

A FEW years ago it was the practice of the profession generally to wash amalgam with either alcohol or soda water. This practice was seriously

questioned, and written against with a very convincing argument, by Fletcher, of Warrington, England, who was recognised as a man of mechanical and scientific ability, himself engaged largely in the preparation of amalgam alloys. He urged that when an amalgam is washed it cannot be thoroughly dried; that as a result, a film of moisture forced out in the work of filling, would intervene between the filling and the walls of the cavity and prevent perfect contact, and would result in future decay and loosening of the filling. Flagg, the author of a work on "Plastic filling," and an originator of several alloys on the market, joined Fletcher in condemning the practice of washing. Other alloy makers, accepting the teaching of these leading men, put upon each packet offered for sale "do not wash," and the profession generally abandoned the practice.

It was not long after this general turn-about, that both Fletcher and Flagg put before the profession a "submarine amalgam!" What now? The profession began to think this a new kind of amalgam, wholly unlike all other amalgams made: an amalgam with which honest work could be done, even when placed in a cavity *filled with saliva!* This seemed in direct opposition to the former scientific claim. After this, the profession went their way like lost sheep; some adhered to the practice of never washing, others always washed, others washed when not in too much hurry and all things favoured it.

I wish now to revive the question again. Is washing an advantage or a detriment to the filling? It seems to me that anyone can satisfy himself by easy experiment. Can an amalgam be made practically dry after being wet? I answer, yes. If the alloy is coarse, and difficult to amalgamate with the mercury, unless ample time is taken and the amalgam ground well in a mortar, it is liable to be granular and rough to the touch and cannot be so thoroughly freed from moisture. It should be mixed until it is smooth and putty-like, and the mercury thoroughly incorporated with the alloy.

To test the utility of washing, take two portions of an alloy and prepare one by washing and the other without washing. For this experiment it is best to take an alloy which you have had on hand for several months, and more or less exposed to the atmosphere. Take this method for washing: After amalgamating with the mercury in the palm of the hand, take twice as much of the bicarbonate of soda and thoroughly mix it up *dry* with the amalgam until it becomes a flour-like powder, then use pure water to dissolve and

wash out the soda. You will observe that the water in your hand has an inky blackness. This color is the black oxides or sulphides of the metals in solution. Wash in several waters and press between the fingers. Now compare the sample washed with the other unwashed sample, and you will see the increased whiteness of the washed sample; for you have washed out a dark colored powder which does not combine with the other ingredients, but remains as an impurity, which gives to the mass a grayish look. Before putting it in the tooth, it should be rolled in a piece of chamois skin, and wrung or twisted until both the moisture and the surplus mercury are pressed out. The chamois skin is so good an absorbent, that when the amalgam is thoroughly mixed, and compacted in the wringing, it will be found dry for use. If this black powder is not washed out, the filling will never be as bright as it would have been had the amalgam been washed. If it is left in, it will be afterwards dissolved from the surface of the filling, and the filling itself thereby rendered porous, and will be more likely to oxidise and be blackened by stains than it would be if the surface is rendered smooth by the density in the packing, and then polished after a day's hardening in the cavity. This after-polishing is very important in preserving the amalgam from future darkening. My advice, therefore is, always wash amalgam.

From what I have now said, it is plain to see that freshly prepared alloys are the freest from the black oxides, and that the best mode of preserving alloys is in an air-tight bottle. If exposed for any length of time to atmospheric influences, all base metals will darken, especially when reduced to fine particles, as in preparation of such metals for amalgamation with mercury. It will be found that when the metals are thoroughly washed, as I have described, they amalgamate much more easily and more thoroughly.

L. C. INGERSOLL, in "*Archives of Dentistry*."

DENTAL INLAYING WITH PORCELAIN.

IN continuation of the subject of dental repair by the employment of porcelain inlays as described in the *Dental Cosmos* for July, 1881, it is to be said that there are further details of manipulation in the setting of the circular inlays, which will here be briefly presented.

For preparing the cavity in the tooth, the barrel burs were adopted as being the best instruments at that time obtainable by dentists for whom the operation was described and shown. Since

then the writer has had made, by the manufacturing company with which he is connected, a set of nine inlay burs, which have straight, slightly tapering sides, and are fine cut on their ends and sides.

The primary preparation of the cavity may be done with any form of bur at hand for the purpose,—as, for example, a square-end fissure bur,—and the depth of the cavity be cautiously, yet judiciously determined to be as great as will be compatible with the continued life of the pulp.

The formation of such cavities in natural teeth which have been extracted, and the subsequent grinding of these into sections through the artificial cavity and the pulp-cavity, will afford an experience that will be useful in aiding one to judge how deep the cavities may safely be made in living teeth of like character.

When the primary cavity has been formed and is about to be enlarged by an inlay bur, great care must be taken to hold the engine hand-piece steady to enter the cavity at a proper angle, and to hold the bur so firmly that it cannot run away and mar the cavity margins. Then slowly yet constantly push the inlay bur down to the bottom of the cavity, being very careful not to chip off the edges of the cavity by either too great pushing force or by swerving to one side or the other. It is also necessary that the bur should run quite true in the hand-piece in order that a hole of true and equal taper and also a truly cylindrical hole may be formed.

Failure in any of these points will be made manifest in the finishing process, as this discloses the slightest superficial defects.

The inlay must likewise be ground to a true frustum, and this is a work of more difficulty than might at first be supposed, especially when it is considered that the taper of the inlay is to be made correspondent to the taper of the cavity. With this object in view I have made the grinder-rest here exhibited, consisting of a corundum slab-holder and hand-piece support, which, by set-screw adjustment, enables the operator to rest the nose of the hand-piece on the support at an inclination that will permit the rotating inlay to be held on the slab at such an angle as will impart the desired taper to the walls of the inlay. By this means an inlay can be made of a slightly increased taper in comparison with the inlay bur, and therefore the inlay will touch the cavity all around its superficial border, thus reducing the joining to its lowest degree. The tapers of the cavity and the inlay should, however, coincide as closely as possible, because it will often be necessary to cut down on one side or the

other, and that will disclose any increasing separation of the inlay from the cavity.

In still further improvement of the accessories to this operation, brass mandrels have been made, and because they are impervious to the water used in grinding, the shellac will stick the inlays to the mandrels with greater firmness than to the wood points. Two of the mandrels are reversible, and a set of three mandrels serves for the set of four inlays. These have been given such sizes and shapes as were deemed suitable for the meeting of nearly all cases, but if there be an occasion for the conversion of a larger into a smaller size, this may best be done at the laboratory lathe by simultaneously running the engine and holding the revolving inlay again at the rotating lathe-wheel. As another means for rapid grinding, a corundum slab having a suitably tapered perforation may be employed; or the arbor-hole of a corundum wheel may be utilized; but neither of these modes seem on the whole preferable to that previously described. The two most difficult points in the manipulative process are the formation of a truly round and nearly cylindrical cavity, and the grinding of an exactly, corresponding inlay. Another difficulty is the preparation of a permanent cement of a color similar to that of the tooth and inlay. Concerning the permanency of zinc oxyphosphate cements, there is nothing new to be said, and with regard to the permanency of inlays set with this class of cements, there are no recorded data on which to base an estimate of the probabilities of inlay continuance in a given case. The most that can now be said is that some zinc oxyphosphates are enduring in the side cavities in some mouths, and that in nearly every instance its wastage, apart from abrasive or attritional wear, is in lines of concavity, leaving the marginal contact undisturbed. A reasonable inference, therefore, is that the thinner the margin the slower the wastage. Hence it is fair to expect that a very close approximation of the inlay margin to the cavity margin will insure a prolonged duration for the thin intervening septum of connective oxyphosphate. The recent publication of inlay articles has attracted the attention of practitioners who allege the setting of them in zinc plastic cements many years ago, and they can doubtless testify to the more or less staying qualities of the work. On the other hand, it may be confidently anticipated that a class of practitioners will declare that the zinc phosphates are ephemeral in all places in the teeth of all mouths, and that inlay

work of that character will be disappointing. That, in fact, it should in no case be advocated, and needs no experimentation to verify its clearly inferential impermanence.

Nevertheless, the experienced dentist will recall cases which (as, for instance, the young lady who had an engagement with some other person than the dentist) he would have been glad to have repaired with an inconspicuous material even though it should certainly be renewed within the year.

It will, however, be conceded that, when the long-expected permanent plastic cement shall have arrived, this inlay process will be deemed an excellent mode of repair, as the samples of inlaid extracted teeth herewith submitted for inspection convincingly attest. No. 1 shows a left superior central having a large labial cavity, and No. 2 a like right central that had a similar cavity, which now has an inlay sat in zinc phosphate. This inlay was made from an old cavity-stopper, and is not so dense as the inlays now furnished, nor is its shade closely similar to that of the tooth; but the operation is obviously, in some respects, an advance upon anything hitherto brought before the profession, and so far as appearances go it would be difficult to excel the similarly inlaid lower right and left cuspids, Nos. 3 and 4, the latter being readily accepted, as it indeed has been, for a perfectly sound tooth.

The vertical section of a central shows the close fitting of the inlay walls with the cavity walls, even after the surface has been cut down considerably around the margins. It also shows the absence of any cement on the floor of the cavity, and that fact in part explains the close contact of the wall; a very essential element of success in the operation.

The color of the cement modifies the appearance of the inlay, which is more or less translucent, according as its shade is light or dark, and the colour of the cement should therefore harmonize with that of the inlay when that is like that of the tooth; but when, as must frequently occur, the tooth is not exactly matched by the inlay, this may be toned up or down by a suitably-colored cement, such as experience only will enable the dental artist to prepare.

A practically permanent inlay can be made with gutta-percha as a joining medium, and the sample No. 6 shows that a very close wall-joint may be made, and the floor also covered, because the mode of manipulating the gutta-percha admits of the complete filling of the cavity.

In practice, the fitted inlay, some preparation of gutta-percha, as Hill's stopping, and the required instruments, are all made hot on a dry water heater, the cavity dried with warm air, the cavity walls thinly lined with the gutta-percha made soft enough to stick to the walls, the inlay put in with a pair of pliers, and quickly pressed home with the hot flat end of an instrument large enough to retain and impart to the warm inlay heat sufficient to completely soften the gutta-percha and cause all the surplus to exude around the inlay. A cold instrument is then immediately substituted for the hot one, and pressure continued until the normal temperature has resulted.

After a short interval to allow the thorough cooling of the gutta-percha, the surface of the inlay may be ground and polished, and the operation finished at that sitting. No. 7 is an example of a small inlay which has been darkened by a bluish shade of gutta-percha, but the joining is a mere line, and the operation is such as would prove permanent and not unsightly in the mouth.

Too great care cannot be taken not to overheat the gutta-percha and so darken it; nor to soil it or the inlay or cavity margins; nor to fail to completely surround the inlay with gutta-percha. Either of these errors will be discovered as a blemish when the polishing process shall be commenced.

No. 8, an upper left lateral in section, shows a close-fitting, yet imperfectly surrounded inlay set in gutta-percha. No. 9 likewise shows one imperfectly set in crude white gutta-percha. No. 10 is an upper right central, having a small inlay set in sandarac, but it, as well as copal and mastic, has a yellow tinge, which is deepened by the melting heat necessary to soften it sufficiently, and hence a darkening of the inlay results.

At the present writing, gutta-percha softened by heat appears to be the best obtainable joining material, all things being duly considered.

The uses of these inlays will not be confined to the circular form cavities previously described, but in many buccal and crown cavities which cannot be given a circular form, the inlay may be approximately conformed, and set in gutta-percha with very satisfactory results.

In large crown and compound cavities where the pulp is nearly exposed the inlays may be set in cement with their bases inward, and so serve as caps to the pulps. In these instances the cement should extend but half-way up the inlay sides, and the remainder of the cavity be filled with gold or amalgam.

Many cases will arise in which, by notching or otherwise grinding an inlay, it may occupy the bulk of a cavity and present a porcelain surface for mastication, thus in a great degree diminishing the otherwise unsightly aspect of a large metal filling.—W. STORER HOW, in *Transactions of American Dental Association*.

IMPRESSION TAKING.

Modelling composition may be classed next to plaster-of-Paris as an impression material. Fortunately it has qualities which indicate its use where plaster-of-Paris is wanting. Teeth standing at different angles or with large crowns and small necks are taken best with modelling composition.

Now, if we could make a combination of these two materials in obtaining an impression in such a manner that only the best qualities of each would be used, we would obtain much better results than by the universal use of any one material; therefore, I have a method to present which I have been using for sometime with the most satisfactory results. It is especially applicable in partial upper cases.

With a spatula made of a material which can easily be bent in any shape, as of block tin or impression tray material, plaster-of-Paris of the usual consistence for impressions is carried to the roof of the mouth and there spread upon the mucous membrane as far back as its desired to make the plate; more plaster is added to this until it is even full down to the necks of the teeth. The lower surface is to be roughened for a purpose which will appear further on. Water for modelling compound being heated, in the meantime the impression tray is filled with one-half the usual amount of the composition and placed in position against the teeth and plaster core which by this time has become hard. When cooled remove and varnish both parts. When the varnish is dry, oil the plaster core only, as modelling composition separates more nicely when varnished than when oiled. From this procure the cast in the usual way.

The advantages of such a procedure are, first, the plaster and modelling composition are each manipulated in such a manner that the best qualities only are used; second, the plaster being placed in position against the mucous membrane in its softest state is allowed to harden without any pressure as is required when using a tray; and third, the plaster is completely under control, and is allowed to extend no farther back than is necessary, so that gagging is largely prevented.—*Ohio Journal*.

THE DENTAL RECORD, LONDON: MAR. 1, 1889.

ORIGINAL DENTAL RESEARCH.

THE remarks of Mr. Henry Sewill in his inaugural address at the last meeting of the Odontological Society, on the necessity of encouraging original research in the field of dental surgery, serve to remind us once more that, in spite of much that has been done, there is still ample scope for careful study and observation, alike required in the interests of suffering, and of a profession which poses as being enlightened and progressive. That there is a lack of energy in this direction is only too patent to the most casual observer, for while all other branches of medicine and surgery teem with numerous workers who vie with each other in the laborious character of their research and the brilliant results of their observations, our own specialty, alas, provides but few imbued with the burning enthusiasm of research. Mr. Charles Tomes, in an address delivered before the Odontological Society some two years ago, sought to account for the fact by the circumstances of the busy practitioner, who, tired out by a long day's work of a very arduous and trying character, felt inclined to take that rest to which he thought himself entitled—or at least to relieve a taxed brain by engaging in work of a more relaxing nature than that of original research. There is much truth in the explanation, especially when we remember that our specialty enjoys the rare distinction of not being overcrowded, and that in consequence, a large majority of our number soon develop into busy men. But there must always be at least some of our younger brethren who have both the desire and the ability to devote themselves to original research, if they could only be encouraged to do so. One way of encouragement, which costs nothing and yet is rare, is sympathetic appreciation. There is too great a tendency

in all paths of life to discourage, if not discredit, the efforts of a man who has the misfortune to be young; whereas the very fact of his being on the sunny side of life, and, therefore imbued with the necessary strength and enthusiasm for carrying out useful investigations after truth, ought in itself to enlist the sympathy and encouragement of all thoughtful men. Another way of promoting research is one which commends itself by reason of its practical value, as proved by oft-repeated experience, viz., the system of endowment; and Mr. Sewill called special attention to the fact that the Odontological Society had it in its power to do something in this direction, and expressed the hope that the time was not far distant when it might see fit to take prominent action in the matter. Mr. Sewill's remarks will be endorsed by most of those interested in the advance of science. A society like the Odontological—which is essentially scientific if anything—is expected to take a prominent position in promoting the interests, not only of its members, but of the profession at large. We are aware that it does not occupy the position of a wealthy corporation, but it has at least the means of providing some modest endowment for the purpose indicated, and we should be glad to find that the Council had acted upon its President's suggestion by bringing before the Society at an early date a scheme for promoting dental science, which would rapidly bear fruit, and redound to the credit of all concerned. Contagion, in matters of this sort, is promoted by means more subtle than any contained in the "germ theory," and it is not impossible that other societies in Great Britain may become imbued with a spirit of emulation inspired by the efforts of the parent society. Who knows?

Post-Graduate Teaching. Few will deny that much practical good results from what are now popularly known as "post-graduate courses." That there is a demand for such teaching is evidenced by the fact that many of our medical schools have instituted classes which have been, and still continue to be, attractive to

a large number of practitioners. Last year saw the inauguration of the system in the dental world, and from what we hear, the courses held at our two dental hospitals in London were universally acknowledged to have been a practical success. No practitioner, if he be conscientious, ceases to be a student; for he is never too old, and certainly never too clever, to learn, not only from his own experience, but also from that of others. In dental matters new modes of manipulation and new methods of treatment are ever coming to the front, and to those who feel that their mode of practice has become a little stilted, or that it runs in a narrow groove, the opportunity of carefully watching special operations by those qualified to perform them comes not only as a pleasing diversion, but is calculated to be of distinctive educational value. Every intelligent man should be essentially receptive, for stray crumbs of knowledge are often to be picked up in out of the way places, which in the aggregate make up a very respectable intellectual meal. But where a special course is provided and the instructors are experienced teachers, the man must be dull indeed who does not imbibe and digest a large fund of information, which cannot but be of great practical value both to himself and his patients. We hope that the days of dental post graduate courses are not over, and that the experiments tried last year have been sufficiently encouraging to induce the proper authorities to institute similar classes. In addition to courses which run on daily for a limited period, and which are adapted to those living at a distance, a suggestion has been thrown out that classes should be held for London practitioners, to be held in the evening periodically, say weekly. In this way many might avail themselves of an opportunity which otherwise they would be deprived of. It would not be a difficult matter to provide suitable artificial light—indeed various forms of illumination might be used simultaneously, and then usefully compared. The London dentist is so accustomed to operate on foggy days, that “use” has become “second nature,” and he ought therefore to make no objection to demonstrating by artificial light. We think the suggestion is a valuable one, and trust it may be acted on.

NEW INVENTIONS, APPLIANCES AND REMEDIES.

We invite *all manufacturers* to send us anything useful and novel, which we shall be pleased to report upon.

"E.P.S." ACCUMULATORS OR SECONDARY BATTERIES.

By the courtesy of Messrs. Coxeter, who are agents for surgical purposes of the Electrical Power Storage Company, Limited, we have been enabled to practically test the value of accumulators for dental work. These accumulators are made in different types for various purposes; the type selected was known as the "L. 7 plates." Four cells were used, each cell being enclosed in a well-made and strong teak box, measuring $5\frac{1}{4} \times 13$ inches, standing $19\frac{1}{2}$ inches over all. The weight of each cell is 74 lbs., and the price £1 15s. The power was used to drive a "Cuttriss" motor, with a White's flexible arm and Hodge hand-piece, and an electric mallet requiring a fairly heavy blow. By means of a switch, one, two, three or four cells were utilized as required. Three cells were amply sufficient to drive the motor, whilst two served to work the mallet very successfully, and the fourth cell was found of great service in helping out its brothers, when at a later period they began to show signs of exhaustion. It is almost impossible to calculate the *exact time* where motor and mallet power are called into use in dental work; it would, of course, have been possible to "run off" the cells and test their endurance in this way, but the work done would simply have been the revolving of the motor without any further resistance. We think it fairer to state that the work actually done represented: (1) The cutting out of 170 cavities; (2) The working of the electric mallet (time not taken); (3) The cutting down of stumps, polishing fillings, polishing teeth (after scaling), grinding down artificial teeth in fine adjustment of bites, and other minor operations. From this statement it is easy for any individual operator to calculate approximately to what extent the cells are likely to be of service to him. We are informed that each cell delivers its maximum discharge up to 75 per cent. of its total capacity, and from our experience we are inclined to think that this is so. It is recommended that the cells should be re-charged *before* they become totally exhausted. The four cells which we have been using have been

re-charged once, and are again doing their work very satisfactorily. The plates used are made of an alloy of lead and are said to be very durable. If a convenient time be selected the accumulators can be re-charged and returned in a day. The price for collection, delivery and re-charging within a reasonable distance is five shillings. We are convinced that these accumulators are practical and effective for dental purposes and feel sure they will be largely employed when their value becomes more widely known. The Dental Manufacturing Company, Limited, are appointed agents, for Dental purposes, by the Electric Power Storage Company, and will be ready shortly to re-charge accumulators on the terms before mentioned. The various types of accumulators may be seen at their depôt in Lexington Street.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

PASS LIST.

DURING the January sittings of the examiners the following gentlemen were admitted licentiates in surgery:—Henry Knowles, Yeadon, Leeds; Kenneth MacKinnon Douglas, Edinburgh; Sydney Harry Appleby Stephenson, Nottingham and Theophilus Bulkeley Hyslop, Inverness.

The following gentlemen passed the first professional examination for the license in dental surgery:—Albert Morris, London; Arthur Percy Stocken, Ealing; Charles Henry James Acret, Canada; and Walter Graham Routledge, Exeter.

The following gentlemen passed the final examination, and were admitted L.D.S.Edin.:—Thomas Cuthill M'Kenzie, Edinburgh; John Edwin Husbands, Bristol; John Stewart, Edinburgh; Frederic Jones, Lancashire, and John Henry Larbalestier, Southampton.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

PASS LISTS.

AT the January sittings of the Examiners the following candidates passed the first part of the Dental Examination:—Edward C. Carter, London; Thomas C. Colledge, Stroud. Two candidates were referred. The following passed the final examination, and were admitted Licentiates in Dental Surgery: Edward George Carter, 181, Edgware-road, London, W.; John Gordon Mackintosh, 76, Lowther-street, Whitehaven; Charles Ernest Tucker, 4, St. John's Wood Terrace, London.

GOSSIP.

AMONG those upon whom the M.A. degree was conferred at Cambridge on January 17th, we are pleased to find the name of George Cunningham, of Downing.

THE old-fashioned method of "buffing" steel instruments is laborious and often difficult where the surfaces are inaccessible, as in the case of several patterns of excavators. The following method will be found very useful, the work being done well and rapidly. Melt two parts of mutton suet and one part of yellow wax, and whilst in a fluid state incorporate with them a sufficient quantity of *flour emery* to make into a thick paste. When cold apply a small quantity of the cake to an old brush mounted on the lathe mandrel and polish in the ordinary way, avoiding undue pressure where the instruments are delicate. A good surface is in this way ensured which is incomparably superior to that imparted by a buff stick.

SOME very remarkable statistics of 130 hospitals and dispensaries of the Metropolis have been collected by Dr. Robert Rentoul, of Liverpool, and published in the *British Medical Journal*, of February 2nd. To all those interested in hospital management we would strongly recommend the perusal of the tables. We note some rather startling contrasts of which the following are good examples :—

	Total number of Patients.			Contributed by Patients.		
Dental Hospital	38,304	...	£122 2s.
Hospital for Diseases of the Throat, Golden Square	4,999	...	£2,094

AN action, we hear, has been commenced in the Queen's Bench Division, by Mr. H. F. Partridge, dentist, against the General Medical Council for "maliciously and unlawfully" removing his name from the *Dentists' Register* and refusing to restore the same. Damages are laid at £7,000. It will be remembered that Mr. Partridge's name was removed from the *Register* in consequence of his diploma having been cancelled by the Royal College of Surgeons in Ireland, for advertising contrary to the rules of the college. His name was subsequently restored to the *Register* in virtue of a mandamus issued by the Queen's Bench Division, on the ground that the Council was not empowered to remove the name from the

Register without having itself adjudicated on the case. The name was again erased at the meeting of the General Medical Council in November, 1887, after investigation of the circumstances of the case. The claim for damages would appear to be founded on the loss, direct or indirect, incurred during the period between the first erasure of the name and its subsequent restoration after the issue of the mandamus. The General Medical Council has probably been engaged in more litigation during the last two years than during the whole of its previous career. No sooner has the action of Mr. H. A. Allbutt been disposed of in favour of the Council than we hear of the commencement of another suit.—*British Medical Journal*.

PARIS, Rouen, Niort and Cherbourg have, some time since, instituted regular gratuitous dental services in their public schools, and lately at Enghien, on the representation of one of its members, the town council has recognised the need of such services, and taken measures to put them in practice. The Dental College in Paris sends one of its senior students periodically to Enghien. The town council agrees to pay his travelling expenses and provide him a room in which to operate, while he provides his own instruments and works gratuitously.

OIL of mustard is now being praised as a lubricator for machinery. The lubricating value is said to stand to that of olive oil in the proportion 263 to 168. It remains fluid at 7° or 8° C. below freezing point, and reduces to a minimum heat due to friction.—*L'Odontologie*.

WE cull the following communication from an American contemporary:—"To the Editor of *Notes of Interest*—Dear Sir,—During my practice here I and my patients have been much troubled by the mosquitos, and after trying many things find the following recipe is never failing: Mix four ounces of oil of cloves, two ounces of oil of peppermint, three ounces of oil of lavender, eight ounces of capsicum, eight ounces of camphor, half a pint of spirits of turpentine, and half a pound of insect powder. Catch the mosquitos and give them half a teaspoonful every fifteen minutes. Then, as soon as they begin to show signs of paralysis, hit them tenderly with a sledge hammer. They can then be removed from a room without danger.—A. W. M."

A SCIENCE Examiner of great experience has sent to the *Pall Mall Gazette*, some specimens of answers received at examinations of girls ranging from twelve to eighteen years of age, during last year. We append a few examples:—

“Milk-sugar is obtained from a plant in the West Indies.”

“Brown bread is more bulky and more spongy, and helps to distend the stomach better than white bread, therefore, it is more wholesome.”

“Carbonaceous foods perform heat, and make people fat; nitrogenous foods perform force.”

“If you want to keep a room healthy, sit in it with a bowl of lime water.”

“If you want to know your temperature, put a barometer into your mouth.”

“The average warmth of air is 300 degrees; of a human body 112.”

“The air is called a compound body because it contains 3 volumes in 1,000 volumes of itself—that is, 33 times less than 1 per cent.”

“A candle burns for a good many reasons—to give light, to give heat, and to save the expense of oil or gas.”

“Carbon may be found in lumbago.”

“Woollen materials dye well, and are non-conductors of lightning.”

At the meeting of the Council of the Odonto-Chirurgical Society, held on the 14th of February, it was decided to postpone the Annual Meeting this year from March till April. It is confidently expected that the new hospital premises will be ready by that date, and the dinner of the Odonto-Chirurgical Society will be held conjointly with one to inaugurate a fresh era in the life of the hospital on its translation to new and more suitable premises, the festivities taking place in the buildings themselves.

In order to provide efficiently for the administration of anæsthetics in the Dental School at Guy's Hospital, it has been decided to appoint an anæsthetist for each morning in the week instead of only one anæsthetist to the Dental School as hitherto advertised. Applications, accompanied with testimonials, should be sent to the Clerk to the Governors of Guy's Hospital, on or before March 25th.

By adding two per cent. of silica to gold its melting point is considerably lowered. It then may be melted by the flame of a candle.—*L'Odontologie*.

ANNOUNCEMENTS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The next meeting of the above Society will be held on Monday, March 4th, at 8 p.m. A paper will be read by J. Bland Sutton "On the relation of Rickets to some forms of Odontomes;" and a discussion will be opened by R. H. Woodhouse on "Antiseptic Dental Surgery." "Casual Communications" by J. H. Mummery and W. A. Maggs.

DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.

The Annual Dinner will take place on March 2nd at the Holborn Restaurant, when Sir Edwin Saunders, the president of the club, will take the chair. The tickets (5/6 each), can be obtained from the Hon. Secs. at the Hospital.

ROYAL COLLEGE OF SURGEONS OF IRELAND.

The next examination for the Licence in Dentistry will be held on Monday, April 8th, and following days. Applications must be lodged with the Registrar on or before March 25th.

DENTAL STUDENTS' SOCIETY.

Next meeting on March 11th. Paper on "Neuralgia," by Mr. Cohen.

VACANCIES.

GUY'S HOSPITAL.

Six Assistant Dental Surgeons; Lecturers on Dental Anatomy and Dental Mechanics; an Anæsthetist; and a Dental Tutor. Applications on or before 25th March to Clerk to the Governors, Counting House, Guy's Hospital.

OWEN'S COLLEGE, MANCHESTER.

A Lecturer on Dental Anatomy and Physiology. Applications, with testimonials, on or before March 4th, to H. W. Holder, Esq., Registrar.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by correspondents.]

THE DENTAL DIPLOMA.

To the Editor of the DENTAL RECORD.

SIR,—Seeing in your last issue a letter bearing upon the above subject, I shall feel obliged if you will allow me a short space to put forward my views, which are extracts from a paper read by myself before a dental society more than two years ago. Then, I must admit, that my propositions were received in very luke-warm style, but in this short space of time many now have altered their previous ideas. In that paper I suggested an M.D.S. (Master of Dental Surgery) degree. Speaking first, about the advantages which would necessarily result to the members of the dental profession in having "Higher Dental Examination," I argued on the social and other side of the question, viz., At the present time, in order to be considered a good dentist by the medical profession, one must take an outside medical qualification, and the man with the highest qualification, as a rule, can swim far ahead of his dental brothers possessing simply a dental degree although the latter may really be better practical dentists. It would also do away with petty jealousy, &c., existing between the dental and medical professions; for this proposed M.D.S. degree would quite rank up to the conjoint examinations of M.R.C.S. and L.R.C.P. I did not advocate doing away with our present L.D.S. degree, but many men wishing to shine in their specialty would take the highest dental qualification as well as the lesser, just as the medical profession first take the L.R.C.P. as well as the M.D. I will now map out, as briefly as possible, the syllabus of work for the proposed M.D.S. degree. *Time required* would be five years, viz., two years learning mechanical dentistry (in lieu of three), and three years at the general and dental hospitals, and for the last year and a half the student must also join a dental hospital. The *work* (lectures, &c.) for the first eighteen months, would be identical with that for the now second conjoint examination, viz., anatomy, physiology, *materia medica*, and chemistry, including metallurgy; at the end of which time the examination in these subjects must be passed (before joining a dental hospital)—this examination would be called the 1st M.D.S. Immediately after passing, the student must at once commence at a dental hospital for the remaining eighteen months (which time, diligently spent, I consider ample to learn thoroughly fillings, extractions, irregularities, &c., and attend the necessary dental lectures); the general hospital, with lectures, must also be regularly attended, and the surgical and one medical appointment should be required to have been taken, just the same as medical students have to go through, leaving out midwifery and other extraneous matter, which really is of little service to those practising dentistry. The student having passed the 1st M.D.S., and having attended the lectures and practice at the dental and general hospitals, he will be eligible for the second or final M.D.S. examination, which should consist of surgery and medicine (same surgery as for the M.R.C.S.), together with the dental subjects. The above is really but a very rough sketch of the proposed M.D.S. degree, but it is certainly a subject which will well pay careful thought, for I am convinced that the next step to raise up our profession is by having an examination of a higher standard.

I am, &c.,

JAMES RYMER, M.R.C.S. & L.D.S.Eng.

THE BRITISH DENTAL ASSOCIATION.

To the Editor of the DENTAL RECORD.

SIR,—In your February issue, you exhort your readers to “rally round the standard of Dental Reform,” and join without delay the much, but not too much, abused British Dental Association, and as your paragraph implies that all reputable men are welcome, I must state that, in face of my experience, I consider it misleading; more than professional loyalty and integrity of character are required, and those of your readers, possessed of such qualifications alone, cannot hope to become members of the Association.

Not long ago, I, as a practitioner, felt it incumbent upon me in view of supporting the B.D.A., to take steps to join that body, and as I may claim that both my personal and professional career are without blemish and defy scrutiny, and have always been such as are becoming to a high-class practice, you will conceive that I had just reason to feel aggrieved, as well as disappointed, when I found the preliminary barriers so difficult to surmount that, at last, I gave the matter up, and now feel apathetic as to whether I remain outside or not. Now, when we read their persistent invitations and appeals to join their ranks and augment their exchequer, it is unintelligible why they should not exert themselves more, even to secure but another unit, and there can be no doubt but that their regulations, as they at present stand, are injurious to the Association and vexatious to a number of its well-wishers. For this reason I would suggest that some modification of the existing rules for nomination should be effected, which should, without prejudicing the standing and respectability of the society, facilitate the enrolment of new members, and which would eventually result, according to their own dogmas, in influencing the tone and elevating the status of the whole profession.

Yours &c.,

February 11th, 1889.

REPOUSSÉ.

CLINICS.

To the Editor of the DENTAL RECORD.

SIR,—We hear much of the value of clinical teaching on all hands, and our cousins on the other side of the pond have instituted practical clinics as a necessary part of *every meeting* of their dental societies. Demonstrations in this country seem to be very rare; and with the exception of once a year at the annual meeting of the British Dental Association (when an *entire morning* is devoted to this purpose), there is no chance of seeing the operations which we read about being performed. Three hours are *lavished annually* on what everybody calls practical and interesting! there is something wrong somewhere. Are our operators too lazy to show others what they can do? or do the gentlemen who describe their operations in flowing language at meetings or in journals, hesitate to *demonstrate* their methods lest they might prove incapable? Surely the Odontological Society ought to do something in the matter; it has plenty of money and suitable premises in the very midst of all the necessary appliances at the Dental Hospital. Is it short of men who would sacrifice a little time for the benefit of others?

I think it was Dr. Elliott who, some time ago, brought the matter before the Odontological, and tried to make the Society blush by having clinics *in his own house*, and inviting all the members there. The movement was a capital one, but the Society still blushes—or tries to do so—and remains wrapped up in its cloak of *conservative dentistry*. Can the new president be tempted to lift the veil and inaugurate a popular phase of professional life? If so, he will gain the thanks of many, and there will be no more dull meetings, where unknown and dull doctors try and physic the simple dentist with boluses that are neither tempting nor effectual.

I am, yours, &c.,
AN OLD FILE.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and *Answers* are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

COPPER AMALGAM.—I have used the copper amalgam known as Sullivan's Cement very largely for the last five years. I have never washed it, and generally packed it in a fairly plastic condition. It does not appear to shrink. It is only in very few instances that I have found it discolour tooth structure. I attribute the bad name it has for darkening teeth to the fact that in many instances decayed or soft dentine has been left in the cavity. To my mind the contrast between the jet black surface of the filling and the white shining enamel is much more beautiful than the dirty slate colour of most other amalgams. The great drawback to Sullivan is the wasting away which is so often alluded to, but the greatest drawback lies in the fact that this wasting away takes place in some mouths principally at the cervical border of the cavity. I have seen many cases where the filling was quite dissolved away near the gum, the rest of the filling remaining hard and smooth. It is by no means easy to cut out a large Sullivan filling, and I would therefore like to know how this wasting away can be prevented. I have observed the same thing in some tin and gold combination fillings. Dr. Weagant, I believe, states that the wasting away is due to impurities in the amalgam. I have used Dr. Weagant's copper amalgam for the past six months, but it will take one or two years' observation before I can say if it is superior to Sullivan or not. Will some one of experience kindly suggest some remedy for this cervical wasting.—W. G.

J. PIXTON WALKER, M.R.C.S.Eng., L.R.C.P.Lond., Resident Medical Officer of Rochdale Infirmary, writes:—

"I desire to bring under your notice the following incident, which happened within the last fortnight, when I was visiting a home-patient in this town. A

respectably-dressed man knocked at the partly open door, and entered. In a loud tone he asked—'Is there anyone here as could do wi' a good new set of teeth? If so, Mr.——-(mentioning the name of a dentist whom I have never seen, nor had I ever heard of him prior to this), of——-, will make 'em for 'em cheap, and good 'uns, too.' Finding no one desired his services, he then left. Is it not a case of consummate impudence (one can hardly call it by the polite term, *lack of professional bearing in the interests of self-advancement*) for a dentist to carry on his profession (? trade) in this manner, after the style of an itinerant pedlar? I am sure, sir, you will agree with me that such an occurrence is a grave dishonor to a worthy profession, and I trust it will evoke from you, as editor of one of its most important organs, strong tones of disapproval. Hoping that the ventilation of this incident may bring about a change for the better."

* * The practice referred to is simply scandalous, but we feel certain that it is very uncommon, and Rochdale is extremely unfortunate in possessing one of a class of practitioners who are rapidly becoming obsolete. The Dental Act has not yet had time to use its broom thoroughly; happier days are in store for the Dental profession, although there will always be a percentage of Dentists—like there is of Surgeons and Physicians—who bring discredit upon their profession.

THE GUILFORD MATRIX.—In a previous number (January, 1888), I mentioned some difficulties I had experienced with Dr. Guilford's Matrices, and hinted at a further communication on the subject. I was then employing the clamps, A, B, and C, with a form of band which I have since simplified. The pattern I am now using differs so little from Dr. Guilford's, that, had not the apparatus as sold proved nearly useless to me, I should not have ventured to occupy your valuable space with what may seem a trivial detail.

The chief disadvantage of the Guilford bands is that they are not held firmly by the clamps; this difficulty I meet by extending the ends of the band a little further beyond the hole than in the original. This enables the clamp when screwed up to hold the bands quite securely. Even where there is no tooth adjacent, this is the case, if the ends are bent well away.

It is, of course, important that the holes shall be at the proper distance from one another. I am able to make sure that this shall be the case in the following way:—

Having fitted a strip of thin German silver to the tooth, allowing it to extend below the cervical margin of the cavity, with a burnisher I press the band well between the teeth so as to mark on it the situation of the interspace. Having removed the band from the mouth or model, I make quite a small hole on either side at the spot indicated for the screw and toe on the clamp to rest in.

WM. M. GABRIEL, M.R.C.S. & L.D.S.Eng.

QUERIES.

PIANOFORTE WIRE FOR REGULATING PLATES.—The great objection to using steel wire for regulating plates is the tendency to rusting, which varies in different mouths. I presume that dipping in a tin bath would injure the toughness of the drawn wire. Has anyone tried tinning or nickel-plating in these cases? How would the new platinizing process do, and is it expensive? If any of your readers interested in mechanical work would kindly answer these questions, I should feel greatly obliged.—DELTA.

SMOKING.—I am often asked by patients whether smoking is injurious to the teeth. Can any of your readers answer the question satisfactorily, or refer me to any authoritative article on the subject? I have often noticed the peculiar black deposit found on smokers' teeth existing in the mouths of ladies, beyond suspicion of indulging in the "fragrant weed." Can anyone tell me what its chemical composition is likely to be?—M.R.C.S., L.D.S.

ANSWERS.

AFTER-PAIN OF EXTRACTION.—I was surprised to find the omission of the old-fashioned "Phenol Sodique" as a remedy for the after-pain of extraction. The combination of Carbolic Acid and Liquor Potassæ has proved useful in many hands, and ought to be tried by all those who are ignorant of its value.—CONSERVATIVE.

HYPODERMIC INJECTION OF COCAINE.—In reply to the enquiries of L.D.S.Eng., with regard to the injection of cocaine, I would warn him to be careful and not to use heroic doses. The following communication to an Italian paper "*Lo Sperimentale*" may not be without interest at the present juncture:—

Two fatal cases of cocaine poisoning have recently been reported in Italy, one by Dr. Zambianchi, of Vigevano, and another by Dr. A. Montalti, of Florence. In the former, a lady, suffering from recurrent cancer of the breast, had four-syringefuls and a-half of a 5 per cent. solution (equivalent to 225 milligrammes), of cocaine injected hypodermically near the proposed site of operation. Immediately after she was seized with epileptiform convulsions, which lasted fifteen minutes. Artificial respiration was performed, and she rallied for a moment, but the convulsions came on again, and in five minutes more she died. The second case was that of a woman suffering from phthisis of one lung, to whom 5 grammes of a 30 per cent. watery solution of the alkaloid, equivalent to $1\frac{1}{2}$ gramme of the hydrochlorate, were given internally by mistake. Fifteen minutes afterwards she began to wander in mind, complaining that a morsel of food had stuck in her throat, and making fruitless efforts to vomit; at the same time she became so cold that she had to be wrapped in hot blankets. The delirium increased, her face was pale, the pupils dilated, the lips cyanotic, and the pulse imperceptible. Unconsciousness supervened, and in a short time she died. Dr. Montalti was ordered by the Tribunale Correzionale of Florence to make a medico-legal examination. He found intense congestion of the brain and spinal cord, as well as of their membranes. The surface of the brain was covered with a thin layer of sanguinolent fluid, while the subarachnoid space was full of serum. Sections of the brain-substance in various directions showed everywhere innumerable minute bleeding points, the drops being confluent, so as to give the whole cut surface a reddish appearance. There were some recent hæmorrhagic infarcts in the healthy lung; the heart was firmly contracted, both ventricles containing a little blood; the spleen, liver, stomach, and small intestine were excessively congested; the kidneys and the bladder were normal. Precisely similar conditions were found in rabbits in which poisonous doses of hydrochlorate of cocaine were injected hypodermically. Dr. Montalti says this is the first case of cocaine poisoning in which the *post-mortem* appearances have been described; in his opinion they show that the mechanism of the poison consists in vasomotor paralysis, which causes an engorgement of the vascular system.—DISCRETION.

[It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 4.

Original Communications.

DEVELOPMENT OF SIXTH YEAR MOLARS.

By JOHN J. ANDREW, L.D.S.Eng.

IN working at tooth development with the microscope, items of great interest often crop up, which explain at a glance, as the following illustration from a photo-micrograph does, points that we are often in doubt about. It is a section taken from a human foetus of from four to five months old, cut through the side of the face from front to back.

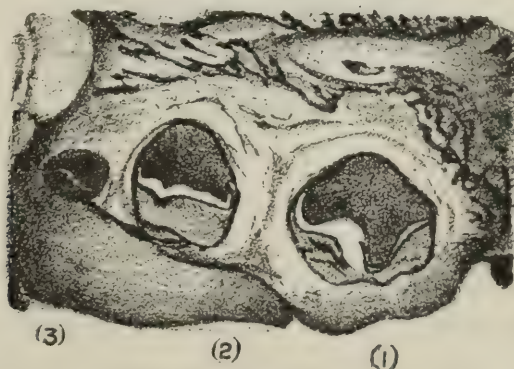


FIG. 1.

FIG. 1.—From upper jaw of human foetus. 1. Germ of first temporary molar. 2. Germ of second temporary molar. 3. Cord and germ for 6 year permanent molar.

In it is seen (1) the germ of the first temporary molar, with its sac, enamel organ, and dentine papilla; at the point of one cusp is seen the beginning of calcification. At (2) is seen the remains of the dipping down of the epithelial layer to form the enamel organ and the germ for the second temporary molar, still in connection with the sac of that tooth. Here the most interesting point is seen, namely, the giving off from this cord a branch for the formation of the sixth year molar; at the end of this new cord is seen the tooth germ, even at this early age. This tooth and the two following molars are

not developed in the same way as all the preceding temporary teeth were, namely by a germ coming in the first place directly from the surface of the epithelium (deepest layer of), but like the permanent teeth which are to follow these, and are formed by a similar branch to that told off for the permanent molars, only in their case the branch is given off and lies at the lingual side of each temporary tooth. This is seen in sections properly cut, as shown in the illustration, which is of a central incisor (upper) germ for temporary tooth, with cord for permanent tooth germ lying lingual to it. In the case of

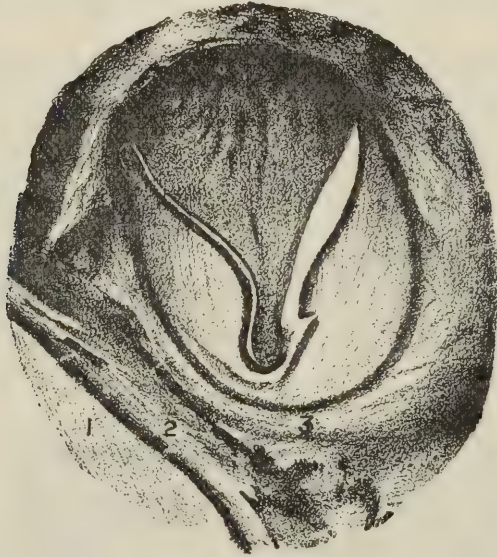


FIG 2.

FIG. 2.—From upper jaw of human fœtus. 1. Line of palate. 2. Cord for permanent tooth germ. 3. Germ of temporary incisor tooth.

the last temporary molar we get two branches given off, one lingual for the second bicuspid and one distal for the six-year-old molar ; from this again in due course will be given off a germ for the twelfth year molar, and from it again, one for the wisdom tooth.

The clear spaces in the illustration between the enamel organ and the dentine papilla are not natural, but are due to shrinkage in the preparation. It is very difficult with such delicate tissues to get them hardened sufficiently for sectioning, and at the same time to get decalcification of the surrounding bone.

The above points are what I have observed myself, and what Charles Tomes teaches in his Dental Anatomy. In the American System of Dentistry, Sudduth says the germs for the permanent molars are developed directly from the surface epithelium, the same as for the temporary organs, though, occasionally, from the neck of the temporary molars. It may be so.

OPEN BITE.

By H. BALDWIN, M.R.C.S., L.D.S.

OPEN BITE is a term applied to that abnormal articulation of the two jaws together in which the back teeth only can be made to meet, the rest of the teeth remaining separated by an interval even when the teeth are clenched.

In extreme cases the hindermost molars only can be closed together. In less extreme cases more of the back teeth antagonise, but the front teeth are still separated by an interval.

The cutting edges of the upper incisors, taken together, present very often a concave arched line. The palate is generally unusually high and the lateral halves of the upper alveolar processes sometimes appear as if pressed together somewhat, *i.e.* to say, the diameter of the upper jaw in the neighbourhood of the bicuspid or bicuspid and molars is reduced, while at the same time there is a difficulty or an absolute impossibility in breathing through the nose.

If dried specimens of adult jaws affected by this irregularity be examined, it will be at once apparent that the ascending ramus of the lower jaw is set at a more oblique angle than is normal, other things remaining the same, this increased obliquity alone will fully account for the open bite; as even a slight increase in obliquity will cause a considerable opening of the front teeth, while the end molars alone will come in contact. As Mr. Tomes has remarked, the full extent of the mal-occlusion is usually mitigated in nature by a lengthening of the ramus, a deepening of the alveolar processes in front and a squeezing of the hindermost occluding molars into their sockets.

In a late number of the *Zahnärztliches Wochenblatt*, Herr Schmidt states that in most cases of open bite which he has observed, the patient has been of a strumous constitution, and this has caused an enlargement of tonsils and a generally increased thickening of mucous membrane of both nose and fauces. Thus the difficulty of breathing through the nose is explained, and also there is presented a reason for an additional difficulty of breathing through the mouth. The result of this is that the mouth has been held open, the tongue has been held down to the floor of the mouth, and the tongue's tip has been pressed against the back of the front part of the lower jaw and teeth in a downward and forward direction. This, operating

on the yielding bone of a strumous person, has caused the alteration of the angle at which the body of the lower jaw is set to the ascending ramus, so that the deformity of open bite is produced. He also suggests that the impact of the column of inspired air upon the roof of the mouth is a cause of the abnormal vaulting of the palate in these cases; this appears to be a rather unlikely cause for the modification in shape of the bone, and I should rather suggest it is due to the bending in of the alveolar processes by the constant slight pressure exerted by the cheeks, which results from the mouth being more or less in a condition of extension.

Open bite has for its results, imperfect mastication, a certain amount of unsightliness, though usually not much, and probably, also, more dental caries than would have arisen had the bite been normal. The increased liabilities to caries may be assumed on the fact that a good deal of interstitial caries is often found in the mouths of these patients, and on the theory that teeth which do not receive their proper amount of friction in ordinary mastication are more liable to caries through loss of the cleansing which ordinary mastication affords.

Mr. Tomes has met with some success, in cases of children, by the use of constant pressure in an upward direction applied under the chin. This is effected by connecting a chin-cap to a skull-cap by strong elastic bands. I am not aware that this has been tried successfully in adult life. It is possible that this treatment may be of useful effect in three ways: first, by driving the occluding teeth further into their sockets; second, by causing a more rapid and more extensive deposition of bone to the articular surfaces of the lower jaw by relieving them from pressure; third, by actually bending the body of the bone, as we know the contraction of a cicatrix is sometimes able to do.

Obviously these changes can be brought about much more readily in childhood than in adult life, while the bone is still developing and before it has become consolidated.

Professor Sauer has recently written in the December number of the *Deutsche Monatsschrift für Zahnheilkunde* on the subject of open bite. He mentions several cases in which section by surgical operation was performed for the remedy of this deformity. He then proceeds to describe a method of his own, whereby he claims to secure the desired result in the best way yet invented, and without surgical operation. His method consists in adapting a metal plate

to the lower teeth, capping them all, and secured by means of screws, the points of which screw into the intervals between the necks of the bicuspid and molars, after the manner of Herbst. To the front part of this plate, near its lower edges is soldered an inclined plane of sheet metal which projects upwards and forwards, is nearly three quarters of an inch in depth (judging from the woodcut), and extends round from about lower canine to lower canine inclusive.

This inclined plane is so placed that the upper teeth impinge upon its inner surface in mastication. Strips of metal are soldered on to the plate when it caps the end molars, and so the bite is raised. It is claimed that, by gradually raising the bite at the same time by gradually bending the inclined plane in and in, the deformity of open bite is at length abolished. Professor Sauer's paper is illustrated by several woodcuts showing the models of the particular case on which he bases his opinion and the apparatus employed.

The case was that of a boy, aged 13, who suffered from an acquired form of open bite, resulting from contraction of cicatricial tissue round the temporo-maxillary joint, after an operation for ankylosis.

The working of the apparatus seems to have been perfectly successful, though I, for myself, at present fail to see how an inclined plane, pressing on the labial surfaces of the upper front teeth, and at the same time tending to draw forward the whole of the lower jaw, by the force of mastication acting indirectly, or even if aided by the constant pressure of elastic bands, as in Mr. Tomes's treatment, could aid in attaining the desired result. I should be inclined to doubt the superiority of this method of treatment in a marked case of congenital open bite; though Professor Sauer maintains it is equally applicable in all cases. Congenital irregularities are notoriously difficult to rectify, and congenital deformity involving the general shape of so resistant a bone as the lower jaw must be especially difficult. For my own part I should deem it a hopeless task to try to remedy it except in a child, unless it were by means of a surgical operation, which surely could scarcely ever be a justifiable proceeding except in very rare and very extreme cases.

WASHING AMALGAM.

By THOMAS FLETCHER, F.C.S.

DR. INGERSOLL* seems to be very much mixed on the question of mixing amalgams. There is a serious difference between mixing a quick setting alloy with a small quantity of mercury and packing this at once under water, and doing as Dr. Ingersoll does, *i.e.*, flooding the filings with mercury and squeezing it out and washing. In the first case we get an alloy which contains a very small quantity of mercury and which packs hard at once almost like cohesive gold, owing to its quick setting; it is practically unaffected by the trace of moisture present, as Dr. Ingersoll will find if he makes any careful tests for alteration of form. If an excess of mercury is once added, it can never be removed; the alloy is much slower in setting, and is much more liable to be interfered with as regards its form if any moisture whatever is present. He calmly ignores any tests as to stability of form of plugs, and judges solely by the appearance in the hand. Further than this, he makes certain statements as to what is washed away from an amalgam without the slightest basis for his statements, as he evidently has made no analysis. What he can wash away from an amalgam depends largely on the state of division of the metal, and the chemicals he uses to produce the discoloration which is to be washed away. If Dr. Ingersoll will take the trouble to make a few large plugs in glass tubes, say three-eighths or half-inch diameter, and will learn how to make these permanently water-tight and colour tight for say, six months, he will not need to trouble his mind about washing or otherwise, he will know all about it so far as his individual working is concerned, and he will know how to produce better amalgam plugs than he apparently does at present.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

AN ordinary meeting of the above Society was held at its Rooms, 40, Leicester Square, on March 4th, Mr. HENRY SEWILL (President) in the chair.

After balloting for several resident and non-resident members, and the adoption of the Librarian's Report—

Mr. HOWARD MUMMERY related a somewhat curious case. A

*In *Archives of Dentistry*, see DENTAL RECORD, page 123.

young lady, aged 14, wearing a lower regulation plate, came to him in January to have it adjusted. She had felt something come loose in her mouth, like a piece of gum. On examination, he perceived what was apparently a small pendulous piece of gum tissue about half-an-inch long, hanging from the alveolar margin of the upper jaw over the position of the unerupted left second molar, which caused considerable discomfort. He divided it with a pair of scissors, but at the end he discovered a small nodule of calcified tissue, in shape very much like an acorn. The stalk of the nodule consisted histologically of the ordinary elements of gum tissue, and was firmly adherent to a loose capsule or sac, which, in its turn, was continuous with the calcified nodule, and formed—with an elevated ring of calcified tissue surrounding the nodule—the cup of the acorn, the rest, or acorn part, being a rounded mass of calcified tissue. After making drawings in different positions and sections, he came to the conclusion that the detached portion of gum was an odontome, connected developmentally with the tooth papilla and follicle, no enamel being present, but only dentine and cementum. Its position was somewhat puzzling, as it was difficult to understand how it came to be connected with the pedicle in the peculiar manner shown in the diagram, and why it became detached. It was apparently liberated by the commencing eruption of the second molar, the outer third of the crown of which was distinctly visible a week after. So far as the structure of the second molar could then be seen, it was a perfectly normal tooth. He believed it was rare to find these abnormal growths connected with the upper teeth in man. Later, the patient described a similar nodule having become detached, but unfortunately it had, in all probability been swallowed, as there was no trace of it.

Mr. W. A. MAGGS showed a good specimen of intrinsic calcification of the pulp in a left lower wisdom tooth. The calcification was not quite complete towards its superior surface, and it might fairly be called a "pulp stone." The tooth was much decayed; a severe and persistent neuralgia of that side of the face led to its removal. Mr. Maggs presented the specimen to the museum.

Mr. ACKERY and Mr. F. J. BENNETT expressed their opinion that the condition was one of invagination of dentine, and not of secondary deposit. Thereupon the PRESIDENT asked Messrs. Maggs, Ackery and Bennett to state their decision upon the matter at the next meeting of the Society.

Mr. HUGH LLOYD WILLIAMS showed and described a calculus extracted from the mouth of a strong healthy man, aged twenty-eight. The patient complained of a small swelling beneath the angle of the left jaw which increased to several times its original size and became very painful on the sight or even smell of any savoury food. He had suffered for four years, and, after consulting medical men and having visited one hospital, Mr. Williams saw him. To test the patient's statement as to the swelling, an apple was given him, and even at the sight of it the swelling commenced and continued to increase while it was being eaten. The only apparent symptom on inspection was that the left sub-lingual gland was more prominent than the right ; careful bimanual examination indicated hardness in the floor of the mouth, but on account of the inflammatory thickening of the surrounding tissues, it was impossible to clearly define the limits of the calculus. The calculus was ultimately removed with small dissecting forceps. Its direction and shape induced Mr. Williams to think that the growth of these calculi was similar to that of calculus on the teeth.

DISCUSSION ON DENTAL ANTISEPTICS.

Mr. ROBT. H. WOODHOUSE, after a few introductory remarks, said that his endeavour would be briefly to allude to recent discoveries in the field of antiseptics as they bore upon dental practice. With reference to special localised treatment of the teeth, too great stress could not be laid on the general treatment of the oral cavity. The environment of the teeth was all important ; the most skilful operations often failed from neglecting some simple general treatment which tended to counteract a septic condition in and about the teeth. The patient needed to be educated to co-operate with the dentist in getting the best results in this respect. A true antiseptic had been defined as that which prevented putrefaction by arresting or destroying the growth of organisms or the chemical activity of certain substances which gave rise to fermentation or decomposition. The patent fang of a tooth with its surroundings of high temperature, food and water supply, formed an excellent incubator of bacteria, and when neglected would be very much like a minute tropical swamp. With proper treatment, however, a condition could soon be produced which would prevent further multiplication of the bacteria by removal of the pabulum from which they were nurtured. He was not prepared to say how far the micro-organisms extended

up the dentinal tubuli beyond the limit of decalcified bone, but he believed they did so extend. In dental operations it was important not only to use every means to destroy micro-organisms, but also to produce a condition of the mouth which left no resting place for them. Whether contour fillings or free divisions were adopted, this should be equally borne in mind. Professor Miller, of Berlin, placed the relative powers of the following germicides in this order :—

Perchloride of Mercury ...	...	...	I in 100,000
Peroxide of Hydrogen ...	...	...	I „ 50,000
Iodoform ...	...	...	I „ 6,000
Salicylic Acid ...	...	...	I „ 2,000
Eucalyptus Oil ...	...	...	I „ 1,600
Carbolic Acid ...	...	...	I „ 1,500
Oxide of Zinc ...	...	...	I „ 1,250
Permanganate of Potash ...	...	...	I „ 1,000
Listerine ...	...	...	I „ 120

To this Mr. Woodhouse added boric acid, which in the form of boroglyceride he found most useful in disease of the antrum or as a mouth wash. The red iodide of mercury, soluble in an excess of iodide of potassium, he stated was considered at least twice as powerful as the perchloride of mercury. Oxide of zinc in proper combination with carbolic acid, Mr. Woodhouse used, and regarded as of the greatest value in the conservative treatment of the dental pulp. He also used this preparation in the case of badly decayed teeth of children where the nerve was not exposed. His custom was to remove the greater part of the decay at the first sitting and place a thick layer of the oxide and carbolic acid formed in a thin paste over the floor of the cavity; this was left for a week or so, when the tooth could be more carefully excavated and filled with Sullivan's cement or osteo. He used the same preparation in adult teeth where exposure had taken place, when it had been decided that the nerve was presumably healthy and would warrant conservative treatment. Although, no doubt, it was sometimes better to leave a little impoverished bone over the nerve rather than expose it, he was, even with the aid of antiseptics, chary of leaving decay in such circumstances. Absolute isolation from the fluids of the mouth alone would stay the progress of decalcification. His experience was that where the dentine had been invaded by decay, it must be removed by polishing or stopping, as no anti-

septic would avail if the fluids of the mouth still had access. Mr. Woodhouse described with some detail his own method of dealing with cases of severe toothache and disorganised nerve structure. He used the preparation of oxide of zinc and carbolic acid for filling roots. The larger part of the root canal and nerve cavity, when not used as a retaining point for anchoring the filling of the crown, he filled with chloroform and gutta percha. If anything then went wrong with the filling the fang remained healthy. He believed that preparations of mercury were most useful in commencing the treatment of root canals in dead and neglected teeth. As a deodorant, after carefully opening up and washing out the nerve canal, he used an application of eucalyptus oil.

The PRESIDENT : I am sure that the members of the Society will agree that Mr. Woodhouse has done exactly what was needed. He has given us a very suggestive paper, and touched upon many points for discussion. The subject of antisepticism is one which I think may well be taken for discussion periodically by the Society. New agents, new facts with reference to their effects, and new points with regard to pathology, are being continually brought forward, and I think that it would be well if for some years we were to devote, say, one evening each Session to this important subject. My contribution will be to bear testimony to the value of perchloride of mercury as an antiseptic agent. The objections which exist to the use of this drug in *general* surgery do not apply to *dental* surgery. In treating the teeth we only use a few drops of the solution, and there is no danger if the whole were swallowed, or any serious constitutional effects. Before going any further, I must express the hope that the discussion will be confined strictly to the point ; we do not want to go into questions of pathology or diagnosis, and shall do well to keep strictly to the lines laid down by Mr. Woodhouse. The preparation of perchloride of mercury that I use is that dissolved in absolute alcohol, and practically you may use two to three grains to the ounce. Both Professors Koch and Pasteur have proved that perchloride of mercury is vastly more powerful than any other antiseptic we possess. It will destroy germs by the application of one weak solution. In ordinary cavities washing them with one weak solution will make them aseptic. In the case of putrid teeth one washing with a strong solution will act like magic. Of course, in clearing canals one must be careful not to force *débris* through the apical foramen. In dressing root canals, one strong solution of

perchloride of mercury in a solution of alcohol is very often enough, though of course it may be repeated over and over again. In conjunction with this I have used iodol, carried in with cotton wool, charged with as much as it will hold. In permanent root fillings I use the same thing, applying the hot air syringe as I go on. Before using perchloride of mercury I used oxychloride of zinc, but since the introduction of the former I have followed the course I have stated. I have been in practice, I am sorry to say, a large number of years now, and I have had sufficient success, in spite of the fact that I am not a good operator, to assure me of the soundness of my method, and of the use of perchloride of mercury as an antiseptic agent in dental surgery.

Mr. F. J. BENNETT was especially glad to hear Mr. Woodhouse's remarks with regard to capping the pulp. It had always appeared to him in exposure of the pulp, that in many cases before the pulp is reached the dentine is found to be disorganised. In his own experience he had found that the plan Mr. Woodhouse advocated, or a similar one, had always been most successful. His colleague, Mr. Forsyth, had used a paste of oxide of zinc and oil of cloves, and capping over had finally filled the tooth with osteo. With regard to drugs that are favourites, he knew that perchloride of mercury is the most powerful known, but he thought it desirable to distinguish between a good germicide and what suits one's particular case; it seemed to him that in using it on a piece of cotton wool it must be pretty well evaporated. He had found a very valuable use for perchloride of mercury—and that, by the way, Mr. Woodhouse had not referred to—in sterilizing instruments. He had used eucalyptus oil, and latterly iodol; the value of the latter, he believed, depends upon the amount of iodine set free in the canal.

Mr. MITCHELL said with regard to liberation of iodine from iodoform, he applied it to the cavity on cotton wool, and vaporised it with a hot air syringe—which had rather a large opening—heated over a bunsen burner.

The PRESIDENT said that he should have remarked that absolute alcohol has the effect of desiccating the particles which on a second swabbing take up the solution and become sterilized.

Mr. W. J. ENGLAND was indebted to Mr. Hern some four and a half years ago for the recommendation of perchloride of mercury as a dressing. Cotton wool saturated with it could be carried to the canal quite well on a Donaldson. Mr. Bennett need not fear its

drying too quickly; it would take two minutes at least. Mr. England used a strong solution of 5 grains to 1 oz.; on evaporation taking place, perchloride of mercury is left in the form of a fine powder on the canal walls, which may then safely be left to argue the question with any bacteria that may happen to come that way. He found iodol less objectionable in taste or smell than iodoform, and he was not afraid of any irritation.

Mr. W. HERN thought that Mr. Woodhouse struck a very good note, when he said, remove the coign of 'vantage for germs to linger, and also remove the pabulum of the micrococci. The best antiseptic, he thought, is a little rotating drill and the wet syringe—what he might call the hydropathic treatment. Antiseptic drugs should only be used for the removal or purification of the very small portions of septic material that are left. After the greatest possible amount had been removed with the drill, the cavity should be washed thoroughly out. Mr. Hern took exception to the use of essential oils, there being no affinity between them and water, and in septic conditions moisture was very largely present. By way of illustration, he mentioned having taken some micrococci and put them into a globule of eucalyptus oil; under the microscope, these micrococci could be seen, *not in the globule, but on the margin of it* enjoying themselves. Perchloride of mercury has a strong affinity for water, and therefore robs the micrococci of one element of their existence, viz., moisture. He still continues to use iodoform in which he has great faith.

Mr. BETTS (Hon. Sec.) read a letter from Mr. Charters White stating that had he been able to be present, he would have brought forward an antiseptic known as "Kingzett's Bactericide." Mr. Betts mentioned that he used *powdered* iodoform mixed in with the wool.

Mr. J. T. BROWNE MASON (Exeter), had also used dry iodoform in the same way, and found it most satisfactory. It also admits of the advantage of being withdrawn readily if necessary. There was one point he would like explained. In a recent case his patient, for whom six months previously he had put in a successful gold filling, complained of a taste of iodoform; there being no opening of any kind he was at a loss to account for it.

Mr. C. S. TOMES observed that one speaker after another spoke of iodoform setting free its iodine. He did not see why it should; but with iodol it was different, for the latter drug was easily decomposed, and had a tendency to stain the tooth structure.

Mr. ASHLEY BARRETT remarking upon the President's considerable experience, asked how he dealt with those advanced cases where the bacteria had affected the dentinal tubes—having extended into the walls of the canal?

The PRESIDENT'S recollection was that Mr. Arthur Underwood has shown, in his valuable research on caries, that micro-organisms *do* penetrate the tubes before they become dilated by the changes of caries, but he (the President) had not investigated that part of the subject. He was himself satisfied that frequent swabbing with any powerful germicide, like perchloride of mercury, and dressings with iodol, would stop all septic action in the canals.

Mr. BOYD WALLIS thought that he was the first to call attention to iodoform and iodol as useful dental preparations. His experience was that they are very readily absorbed and very evanescent. He endorsed Mr. HERN's remarks as to essential oils. Eugenol he believed to be the best anodyne we possess, but latterly he had successfully used a solution of sulphur in ozonic ether as a capping for exposed pulps. He used various preparations of naphthol—a bi-product of coal tar—but preferred beta naphthol, which he considered the best antiseptic for dental purposes. It was said to be poisonous, but he had never found it so, although he had used it freely for dusting ulcers.

Mr. HERN remarked that, so far from finding iodoform evanescent, he had recently taken out a filling put in during 1883, and found the odour of iodoform as powerful as ever.

Mr. GEO. CUNNINGHAM was of opinion that (in the large majority of cases of root filling) the dental engine is the most important agent in dealing with septic areas, and deprecated the unnecessary resort to antiseptic drugs.

Mr. WALTER H. COFFIN found oxide of zinc and glycerine, with 1 per cent. of arsenic, extremely good as a root filling. In the case of ramified alveolar abscess he knew of nothing better than peroxide of hydrogen. Kingzett's preparation, with peroxide of hydrogen, was very satisfactory, and it had occurred to him to combine with it perchloride of mercury; in that way, when the oxygen had decomposed, a little of the perchloride of mercury would remain deposited.

Mr. BLAND SUTTON read a paper on
THE RELATION OF RICKETS TO SOME FORMS OF ODONTOMES.

Some years ago, he said, he had endeavoured to point out that the delay in the appearance of the teeth in rickety children must be

attributed to abnormal thickness of the follicle, and he thought that it should not be a matter of surprise that the tooth-sac should be thickened in rickety children when it was remembered that this remarkable disease affects more particularly those membranes which are engaged in the production of bone. So also would it be inferred that as the tooth-sac was responsible for the cementum of the tooth and a part at least of its alveolus, the follicles in mammals, including rickety children, would be abnormally large. Mr. Sutton pointed out that in nearly all the specimens of fibrous odontomes which he had shown to the Society, the skeleton of the mammal possessing them was severely affected with rickets; in each case the tumours were multiple and symmetrical; those which occurred in the upper jaw were much larger than those found in the mandible. Histologically they were composed of young fibrous tissue with laminae of well-formed bone interspersed, and presenting here and there giant cells. In many cases the fangs of a well-formed tooth were imbedded in the tumour in the upper jaw, but this was rarely so in the lower jaw. Mr. Sutton supported the contention that the association of rickets and fibrous odontomes was not casual, by citing among others the case of two young Assyrian bears killed in the Zoological Gardens because they were deformed by rickets; the follicles of the molar teeth were greatly enlarged, and projected as rounded fibrous tumours. He also referred to two tumours in the collections of the Royal College of Surgeons, which are described as myeloid tumours, and were removed from a boy aged $7\frac{1}{2}$, suffering with rickets. Mr. Sutton had no hesitation in pronouncing these specimens to be overgrown tooth follicles, due to rickets. He remarked that it should be borne in mind that a few myeloid cells are not sufficient to constitute a myeloid sarcoma; the giant cells should make up a very large part of the tumour. In conclusion, while it was far from his intention to insist that all odontomes are to be attributed to rickety changes in the follicles, it seemed probable that rickets was responsible for some both hard and soft varieties; nor need it be a matter of surprise that tooth follicles, enlarged and thickened by rickety changes, might become in later life hard odontomes, seeing that the long bones in the progressive stage of rickets are very soft, and thicken and become hard in cases of recovery.

The PRESIDENT: Mr. Bland Sutton may be said to be a scientific explorer. His valuable and interesting papers here, and his lectures at the Royal College of Surgeons, embodying as they do the results

of his investigations, invariably contain much that is new to us, and there is not the least doubt that valuable generalizations will arise from his studies. We all recognize Mr. Bland Sutton as an important member of the scientific world. But, because his papers either contain fresh discoveries or throw entirely new light upon our present knowledge, we find it somewhat difficult to discuss them without time to digest them. There are, however, many members of our society who are capable of discussing them and I hope we shall have a good discussion to-night.

Mr. C. S. TOMES: I believe, Sir, that the observation that Mr. Bland Sutton has made is the outcome of several years' reflection and investigation. I recollect some questions he asked me some years ago, as to alterations that take place in tooth follicles in connection with rickets. This observation is an absolutely original one; I do not remember anywhere to have seen any allusion of the kind, and it is one the value of which to pathology is very obvious. There is one matter that I should like to make a remark upon: Mr. Sutton says that he has carried us a little further in point of classification, and that the specimen would form what we understand by an odontome. Looking at the specimen it does not appear to me that it would. It seems to me, looking at the specimen, that the tooth tissue, so far as the dentine and enamel are concerned, is unaltered, and that had further calcification gone on the result would have been hypertrophy of cementum. Odontomes resemble only partially the ordinary tooth form, but the specimens handed round are quite normal in form, so that being further calcified the tumours would not correspond quite to any form of odontome that we are familiar with. With regard to Mr. Mummery's specimen, it is a very curious little body. I had the opportunity of seeing it when it was fresh, and it is a little difficult to understand how it erupted. There is one point to which Mr. Mummery has not called attention—though it was merely an oversight on his part, as he remarked it when showing the specimen to me—and that is that its pedicle is attached to the wrong end, being attached to the base of the pulp. I have nothing to say in explanation of the fact, but it is a peculiarity that if thought out may enable one to get at an intelligible history of it.

Mr. MITCHELL: I should like to ask Mr. Sutton if he considers this a special class of odontomes, *i.e.*, out and beyond what we ordinarily understand odontomes to be.

Mr. F. J. BENNETT: I suppose Mr. Bland Sutton would call this

a cementoma? The thickening of the cementum would not alter the formation of the dentine in any way.

Mr. STORER BENNETT : I had not the opportunity of seeing the specimen when it was being passed round, but without wishing to challenge Mr. Bland Sutton's description of classification—for that we all know is an extremely dangerous thing to do—I should like to say that there was one point which struck me as rather peculiar. In most animals odontomes occur symmetrically, though, if not absolutely unknown, they are extremely rare in human beings. It seems to me that the question suggests itself that if these odontomes are due to rickets, why do we not get a greater number of symmetrical odontomes in rickety people?

Mr. PATERSON : I should like to ask Mr. Sutton if it is necessary for the ordinary sarcoma to contain 4-5ths of myeloid cells in every case?

Mr. BLAND SUTTON in reply said : Sir, Mr. Tomes is quite right when he remarks that this thing has been slumbering in my mind for some years. I think it is about eight years ago that I had the extreme pleasure of making Mr. Tomes' acquaintance, and it was over the jawbone of a rickety baboon. I asked him several questions, but Mr. Tomes, in that cautious way which should distinguish all true scientific investigators, kept an open mind upon the subject. I have been at work on the relation of rickets to odontomes since that time. Now, odontomes which occur in animals are of two great classes, those which I call cementomata—which are due to the ossification and enlargement of the follicle; and composite odontomes—due to aberrations of the whole tooth germ. To prove that they really arise from such conditions, I had the opportunity of examining the largest that has been known in a horse. I decalcified it, and in the middle of the soft matter there was the outline of three teeth. With regard to the w-shaped odontomes that we find in the human subject, they occur most commonly in the lower jaw; but in the classical case of Hare of Limerick, the odontome occurred in the upper jaw, and had the well formed crown of a tooth attached to it. When soft odontomes occur in the lower jaw of animals they do not contain any trace of tooth substance. Had the soft tumours in the bears become calcified, we should have had a well shaped tooth, such as we see in the human subject when the odontomes occur in the upper jaw; but in the case of the lower jaw the odontomes would have presented themselves as a shapeless mass of dentinal

tissue. With regard to the number of giant cells necessary to make a myeloid sarcoma, if our classifications are to be worth the paper they are written upon, our definitions must be sharply drawn, and therefore it is desirable to say that there must be at least 4-5ths of these myeloid cells, and the tumour should be a maroon colour to make a myeloid sarcoma. It may be interesting to Mr. Paterson to know that the larger the number of these cells the less likelihood there is of a recurrence of the tumour.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

ORDINARY monthly meeting, held March 1st, 1889, SIDNEY SPOKES, Esq., President, in the Chair.

The minutes of the preceding meeting were read and confirmed.

Mr. SHEPPARD having signed the Obligation Book, was welcomed by the President as a member of the Society.

A lady candidate according to notice was ballotted for, the result being unfavourable to her election as a member of the Society.

Mr. MITTER was present as a visitor, and the President invited him to consider himself a member for that evening, and to take part in any discussion which might ensue.

Casual Communications.—Mr. HUMBY spoke of the dangers in using Sullivan's and other amalgams, when not properly plugged down to the cervical margin. He brought forward two specimens of molars, shewing cavities; in one was an unknown amalgam, in the other cohesive gold. Both fillings had failed at the cervical margin through imperfect condensation thereto.

Mr. CLARK mentioned a case of hæmorrhage from a mesial cavity in a second lower molar in which the pulp was exposed, and which he destroyed. He drilled into the anterior root, upon which blood flowed profusely for about 10 minutes. A styptic was applied which caused pain, and the cavity was then filled with an oxy-chloride. About a fortnight afterwards the filling was removed when the blood again spurted out. The cavity was then plugged up with cotton wool. He also showed model of a distal cavity in a lateral incisor tooth, which extended right under the gum and did not allow of the rubber dam being properly applied. As the patient wished to have the tooth filled with gold, Mr. Clark had to hold up the rubber with an ordinary excavator in his left hand, while working with his right. He wished to know whether gold was justifiable in such a case.

A discussion on Mr. Clark's communications ensued in which Messrs. HUMBY, T. G. READ, RUSHTON, GREETHAM, and the PRESIDENT took part.

Mr. HAYCROFT presented a model of two molar teeth, showing the free use of arsenious acid by a so-called dentist (?), which instead of being placed in the cavity had been plugged up between the teeth, and caused extensive necrosis of the socket. Also a very good specimen of polypus of the pulp.

The PRESIDENT then called upon Mr. HAYCROFT for his paper on

SYPHILIS, AND ITS RELATION TO DENTAL SURGERY,

which proved to have been dealt with in a very thorough manner, especially as the subject gave so wide a range to the writer, and was much appreciated by the assembled members.

He began by giving a brief survey of the disease in its general aspects, and showed how syphilis was a general infective disease communicated by impure contact between the two sexes usually, and occasionally by other accidental and innocent ways, as accoucheurs and surgeons getting infected. The different stages of syphilis were gone into, beginning with the incubation lasting from the time of infection to the development of the typical hard chancre at point of contact (usually three weeks). After this had healed, and usually after a period of two or three months, the secondaries appear, which are characterised by the appearance of various rashes on the skin, mucous membrane, and soft palate, &c. Within two or three years generally of the disappearance of these symptoms come the tertiaries, which are an aggravated form of tissue destruction, and manifest themselves mainly as outgrowths, rapidly degenerating, forming gummata in the skin, bones and other parts. Mr. Haycroft entered briefly into the pathology of the subject, more especially of the secondary manifestations, and also of the gummata and necrosis of bones in the later stages. The treatment was then considered, and reliance on mercury in the early stages and pot. iodide in the later was recommended. Special attention was drawn to the fact of treating constitutionally as well as locally.

The subject of congenital syphilis was considered, mainly as regards its early symptoms of snuffling, sore bottom, &c., and the "pegged" teeth of Jonathan Hutchinson were drawn attention to.

Then Mr. Haycroft came nearer to the dental surgeon, and after giving the various affections the mouth is subject to in this disease,

and describing their pathology, he made a few practical remarks as regards our conduct in dealing with them, *e.g.*, scrupulous attention to cleanliness of instruments, &c, &c.

A discussion on the paper then ensued, in which Messrs. HUMBY, Dr. MAUGHAN, T. G. READ, GREETHAM, FIELD and CLARK took part.

After which Mr. HAYCROFT replied to the various gentlemen who had taken part in the discussion, and the PRESIDENT congratulated him upon the choice of his subject.

A hearty vote of thanks was then accorded him, and the meeting adjourned till Friday, April 5th, 1889, when a *special meeting* will also be held, and Mr. R. DENISON PEDLEY will read a paper.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

AN ordinary general meeting was held on Monday, March 11th, at 7 p.m. Mr. WILLIAM HERN, President, in the chair.

The minutes of the previous meeting were read and confirmed.

On Casual Communications being called, Mr. WOOLF showed a lower molar tooth, with five distinct canals.

Mr. HERN presented to the Society's museum the skull of a common hedgehog.

The PRESIDENT then called on Mr. Cohen for his paper on

NEURALGIA.

Neuralgia was defined as "nerve pain." After briefly glancing at the history of the affection, which was held to be increasing in its severity, Mr. Cohen passed on to the causes of neuralgia, which he divided into two great classes, Predisposing and Exciting. Under the respective headings he grouped the following conditions: *Predisposing*: Neurotic Temperament; ‡Period of Life; Fatigue; Overwork; Cold, Damp Atmosphere; Chronic Alcoholism; Dyspepsia. *Exciting*: Constitutional; Immediate; Remote and Reflex.

He exhaustively dealt with each of these details, and thought the neurotic temperament was induced by a violation of the laws of consanguinity, and by the begetting of offspring under unhealthy conditions of mind and body; and that nervous exaltation was probably caused by the competitive age we live in and the struggle for superiority we undergo. The period of life most affected was

between 20 and 50 years of age. The neuralgia of old age was believed to be caused by senile atrophy.

As constitutional causes he instanced gout, rheumatism, syphilis, diabetes, anæmia and many other disorders. As immediate causes: epilepsy and other organic lesions of the brain, extremes of temperature, dental exostosis, calcification of the pulp, growths of nodules of dentine in the pulp cavity. Reflex and remote: Pregnancy, and morbid growths in various parts of the body, which by pressure upon some filaments of a sensory nerve reflexly transmitted the pain till it was felt in the fifth nerve, and thus caused facial neuralgia.

Cases of insanity caused by neuralgia were mentioned, primarily induced by exostosed roots, in which the patients had recovered on the removal of the roots.

The anatomical relations of the fifth pair of nerves were described, as well as the maxillæ, with their contents and connections. He mentioned changes of nutrition noticed in chronic cases, causing change in the colour of the hair, excessive growths of epithelium on the tongue, &c. He also spoke of such affections as amaurosis, glaucoma, &c.

The diagnosis was next touched upon, and the reader of the paper described the characteristic neuralgic pain, and compared it with other kinds of pain, and said that pain was sometimes our one and only symptom, and that we should recognise fully its character. The absence of febrile disturbances was almost diagnostic of neuralgia. The remittent and intermittent character of the attack was another point to be considered.

The prognosis, on the whole, was held to be favourable, especially in early life. With reference to treatment, he spoke of surgical measures, electricity, &c., and mentioned cases where the latter had been successful after the failure of other remedies.

With reference to drugs, he spoke of the hydrate of croton chloral as acting upon all neuralgiæ from whatever cause, and also drew attention to antipyrin and antifebrin, which were destined to play an important part in the treatment of this disorder; and, from experience, he prefers the latter in 10 grain doses, but remarked that both these latter drugs are as yet comparatively untried.

The paper was illustrated by specimens kindly lent by Mr Bennett, Mr. Preedy, and Messrs. Ash and Son; and by diagrams drawn by Mr. H. Darke.

The discussion was opened by Mr. PERCY SMITH, who thought

Mr. Cohen had gone too widely a-field. Dentists ought to concern themselves only with cases of purely dental origin. He had seen two cases of neuralgia due to shrinking of bony canals after the extraction of teeth, and also a case where necrosis of the antrum was the cause.

The PRESIDENT drew attention to the importance of differentiating between neuralgia due to some central lesion, and that due to a peripheral one; a point in diagnosis being the much larger area affected in the former condition. He narrated two cases: The first, of a boy under Dr. Moxon of Guy's, who had severe pain in the right half of the lower jaw. Mr. Pedley finding the teeth to be perfect refused to remove any. So severe was the pain, that the boy himself removed with a pair of scissors the wisdom tooth, a bicuspid, and the canine of the same side, but there was no relief, and a subsequent *post mortem* disclosed a tumour of the brain. The other case was one in which neuralgia, together with trifacial paralysis, was caused by a central lesion. He also pointed out how much more intense was the pain if a lesion be limited to only a portion of the pulp. Especially was this shown where the pulp of one root of a molar is dead, those of the others being alive.

Mr. LLOYD-WILLIAMS emphasized the President's remarks as to chronic inflammation of the pulp being a common cause of neuralgia, and said that he had been able to endorse that opinion as a matter of personal experience in a paper read before the Students' Society some thirteen years ago. He instanced the case of a lady aged 38, who had persistent intense neuralgia down the right side of the face and neck, and the right shoulder and arm. She had been under medical treatment for a long time. Two years ago, to eliminate dental origin, the speaker had removed all causes that were in the slightest degree suspicious, but the neuralgia still persists. He pointed out that cases like this disproved Mr. Cohen's assertion that a visit to the dentist was always the cure for neuralgia.

Messrs. WOOLF, DOLAMORE and PORTER also spoke, and Mr. COHEN then replied.

The PRESIDENT accorded the usual vote of thanks to the reader of the paper, and to those gentlemen who had brought forward Casual Communications.

THE DENTAL HOSPITAL OF LONDON.

THE 31st annual meeting of this institution was held at the Hospital, Leicester Square, on March 14th, under the presidency of Sir Edwin Saunders, one of the trustees. In the report, which was unanimously adopted, the Managing Committee congratulated the Governors on the continued success and prosperity of the Institution; also on the great benefits which the hospital continues to afford to the suffering poor, 51,406 cases having been treated during the year 1888, a large number of them painlessly (under anæsthetics), being 3,965 in excess of those of the previous year, and 29,412 in excess of the number treated in 1874, when the hospital was removed to its present site. That although, mainly owing to the legacies received during the year, the Committee had been able to reduce the mortgage debt on the hospital, there was still a deficit of £3,000 in this account, incurred through the indispensable enlargement of the hospital; and they felt compelled to make a further special appeal for funds to enable them to clear off this encumbrance, which presses so heavily upon the institution, and greatly curtails the benefits which it would otherwise be enabled to confer upon the suffering poor. Help, by an increase in annual subscriptions, is earnestly solicited. The Charity is unendowed, and additional funds would enable it to greatly extend its usefulness.

THE NATIONAL DENTAL HOSPITAL.

THE Students held the last of a very successful series of Smoking Concerts at the Hummums Hotel, Covent Garden, on the 20th ult.

Mr. SIDNEY SPOKES was in the chair, the Dean (Mr. F. HENRI WEISS), occupied the vice-chair, and there was a large and appreciative audience. The "National Dental Smokers" are deservedly popular, and the last of the season was worthy of its predecessors. Mr. ERNEST GENET's recitation "The Dream of the Bilious Beadle" was exceptionally good, his impersonation of Henry Irving being particularly able; in response to loud calls for an encore he gave "The Jackdaw of Rheims." Mr. GLASSINGTON's funny songs are too well-known to need characterising; Mr. A. SMITH, who is equally well-known, was in capital voice and exquisitely rendered "Come into the Garden, Maud." Mr. DUNLOP (baritone and Mr. RUSHTON (tenor) rendered good service, and Mr. APPELGARTH proved an invaluable accompanist.

DENTAL PROSECUTION IN GLASGOW.

AT Glasgow Sheriff Court yesterday (March 7th), before Sheriff BALFOUR, James Gray, residing at 3, Minerva Street, was charged with having contravened "The Dentists' Act, 1878," as amended by "The Medical Act, 1886," in so far as he, not being a legally qualified practitioner or registered under "The Dentists' Act," did on the 14th November, 1888, and still does, display at the windows of his house a sign-board with the words :—"Best artificial teeth."—James Gray, late with B. Sutherland, surgeon-dentist.—Teeth extracted ;" and above the door of the close leading to his residence a sign with the words—"James Gray, late with B. Sutherland, surgeon-dentist." The complaint was at the instance of Mr. Samuel M. Carrick, writer, acting on behalf of the British Dental Association.

Mr. GRAY pleaded guilty.

Mr. ALEX. RUSSELL, writer, who appeared for the respondent, handed to his Lordship a discharged indenture which showed, he said, that his client had served five years to the art and craft of a mechanical dentist with Mr. Sutherland, whose permission he had to use the words, "Late with B. Sutherland, surgeon-dentist." The respondent had also been for thirteen months in the employment of one of the best surgeon-dentists in the city, who certified to him being honest, attentive, and diligent, and a capable workman. The public had not suffered in the slightest degree by his client's actings. On the contrary, he could have brought forward several patients of Mr. Gray to prove that they have been as well attended by him as they could have been by any certificated dentist in the city. It was the first prosecution under these Acts that had taken place in Glasgow, and he submitted that a small penalty should be imposed. The respondent is only twenty-one years of age, and his sole reason for not being qualified at present was the lack of means. It was his intention to go forward and be a dentist under the Dentists' Act.

Mr. CARRICK said that the Act required that no person who did not possess the qualification required by it should hold himself out to be a dentist. It was true that this was the first case of the kind in Glasgow—there had been only one previous case in Scotland, and that was at Edinburgh—but it was an aggravated case. In June the respondent's attention was called by the secretary of the Dental Association to the fact that he was displaying the signboard without

possessing the necessary qualification, and it was stated that if he continued to display that signboard he would be prosecuted. He originally had the words "Mechanical Dentist" up, and, in order to evade the Act, he put up the sign libelled.

Mr. RUSSELL said that his client had originally a sign with the words, "James Gray, mechanical dentist," and was not aware at that time that he was contravening the Act. To suit the Dental Association he changed the sign to "James Gray, late with B. Sutherland, surgeon-dentist."

The SHERIFF imposed a fine of £5, with the alternative of fourteen days' imprisonment.—*Glasgow Herald*.

NITROUS OXIDE NARCOSIS AND THE BLOOD.

By Dr. ULBRIEH, of Reichenberg.

(From the "Austro-Hungarian Zahnheilkunde." Translated specially for us.)

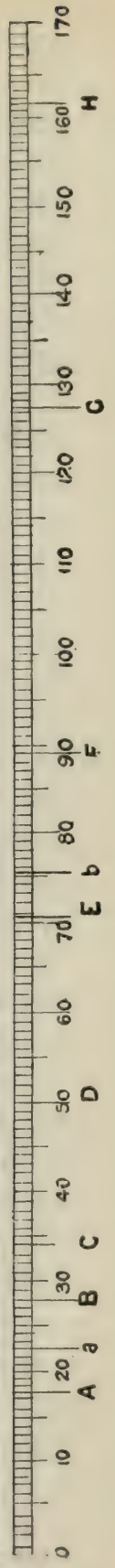
THE nitrous oxide question has lately been fully discussed, especially with regard to its combination with oxygen. Opinions were brought forward which in various ways contradicted the well-known teachings of physiology. Amongst other assertions, it has been maintained that nitrous oxide does not combine with the blood, but is in solution only, and is thus readily eliminated; whereas other anæsthetics, ether, chloroform, as well as various gases, nitric oxide, carbonic oxide, &c., we know for certain combine chemically with the red corpuscles, that is with the hæmoglobin.

Notwithstanding that nitrous oxide has been long known and considered harmless, ignorance of its physiological action may have the most serious consequences, therefore it is absolutely necessary to establish as accurately as possible the action of this agent on the human body; mere hypothesis can never suffice.

Supposing that a patient intends to undergo a dental operation by means of laughing gas and is in the operator's room, perhaps in the chair itself, either suddenly from fear or excitement he is seized with apoplexy and dies—men do die suddenly under all possible circumstances—what then? had there been no other witnesses of the occurrence, would not the relations unconditionally have blamed the doctor for the death and have attributed it to the careless administration of the gas. Would they have believed his statement that the gas had not been given? certainly not! and the necessary consequence would have been legal proceedings; but even without this, suspicion



1. Nitrous oxide
hemoglobin spectrum.
2. Reduced nitrous
oxide
3. H_2O_2 - oxyglobin
4. Carbonic oxide
5. Reduced
Hæmoglobin
6. Hæmatin in
acid solution.
7. Hæmatin in
alkaline solution.
8. Reduced
Hæmatin.



would still rest on the administrator. Thanks to science we possess an instrument, the spectroscope, which in this case, in unquestionable language reveals the truth.

Examination of the blood of a patient narcotized by gas, with the spectroscope, shows us characteristic traces such as are produced by no other agent, so that we can always with the fullest assurance determine whether this agent has been used or not.

Chemical examination must only give negative results, seeing the immense difficulty of gas analysis where only small quantities of blood can be obtained.

The spectroscope is used chiefly to observe bright flames by its spectra; the light first falls through a powerful prism, then through a small cleft which is fixed by means of an astronomical telescope, simultaneously an apparatus is used which throws a scale upon the spectrum. A flame with a white light (gas, oil, petroleum) shows the whole unbroken spectrum, whilst a flame which gives no light shows a broken spectrum (bunsen burner, hydrogen) if lighted by means of volatilising metals. The sodium flame shows one single yellow line (*marked D*), thallium, a single green line, other metals, two, three, and more characteristic lines of light, and their presence undoubtedly indicates the existence of these bodies. Should the spectral analysis be applied for the examination of pigments, gases, &c., and for the changes which they undergo under certain conditions, it becomes no longer a question of determining an individual spectrum, but rather the variation from the normal unbroken spectrum. For this purpose the material to be examined (in a state of solution) is brought between the light and the cleft, in a specially constructed glass tube.

On examination of the spectrum, various dark bands are seen which originate from the absorption of light in the solution. But as with the non-lighted flames, the stripes of light are characteristic for single bodies, so also are the lighted flames perfectly characteristic for the determination of pigments, especially of hæmoglobin and of gases which have entered into combination with it.

The solution must not be too concentrated, or the spectrum will be quite or partially darkened, though the absorption bands may still be recognised with certain colouring matters even in the greatest dilution.

First we shall consider the relation of a hæmoglobin or oxy-hæmoglobin solution (spectrum 3). A hæmoglobin solution which

was prepared with the admission of air, shows in the spectral apparatus two dark bands between the lines of D and E in the spectrum (in yellow and green). The band next D is darker and more sharply defined, the one near E is broader but more blended. The space between the two bands is bright.

But these two bands only appear in the presence of oxygen, therefore in oxy-hæmoglobin and in hæmoglobin solution containing oxygen. If these solutions are deprived of the oxygen by a mixture of tartaric acid, sulphate of iron, and an excess of ammonia, or secondly, by an ammoniacal solution of oxide of zinc, or thirdly, by colourless sulphide of ammonium, both stripes disappear, and in place of the light spaces between them a single absorption band makes its appearance (*see* spectrum 5).

The hæmoglobin is able not only to combine with the oxygen but also carbonic oxide, nitric oxide, &c. The blood of those asphyxiated by carbonic oxide gas, that is to say, carbonic oxide hæmoglobin shows in the spectral apparatus almost the same absorption bands (*see* spectrum 4) as oxy-haemoglobin, only a little inclined towards the violet.

Almost identical, only weaker, is the nitrous oxide hæmoglobin spectrum. Why should we not suppose that a combination of these gases with the hæmoglobin takes place rather than a mere solution? Because even after many months such combinations still show the characteristic absorption bands, whilst with the oxy-hæmoglobin decomposition sets in in a few days.

When hæmoglobin is decomposed, the iron containing substance hæmatin is thrown off, the spectrum of which in acid solution is shown in 6, and in alkaline solution in 7. If the solutions are treated with reducing agents, one of the absorption bands of the hæmatin disappears, and two dark absorption bands show themselves which resemble those of oxy-hæmoglobin, but are distinguished by their breadth and position (spectrum 8). Now let us compare all these blood spectra with those of the nitrous oxide hæmoglobin. For the purpose of examining the blood, an individual was narcotized by means of nitrous oxide, and in the deepest insensibility an incision was made, the blood drawn, avoiding as much as possible contact with the air. In later attempts rabbit blood was used. The nitrous oxide hæmoglobin spectrum (spectrum 1 and 2) shows a condition entirely different from all other spectra.

(1a.) The absorption bands are broader, but lie also between D

and E, but incline more towards the left, and (b) whilst in the ordinary blood spectrum, the shaded border lies in the violet at 170, it with the nitrous oxide hæmoglobin spectrum begins at 150.

(2a.) On reduction with sulphide of ammonium, the bands disappear and give place to one which lies between 50 and 60, but commences exactly at 50, therefore compared with the absorption bands of the reduced hæmoglobin spectrum (spectrum 5) it is much broader, and inclines to the left. (b.) Also in the reduced nitrous oxide hæmoglobin spectrum, the shading line in violet, inclines to the left and begins at 164. (c.) In addition, an entirely new weaker absorption band appears in the middle between C and D, but lying in the orange.

The presence of nitrous oxide in the blood of those who are under the influence of the gas, or in that of rabbits killed by this agent, is most easily and most reliably indicated by the spectral analysis. The question whether nitrous oxide is simply mixed with the blood, that is to say, dissolved in the serum just as water dissolves a certain amount of the gas, is doubtless to be answered in this way: that nitrous oxide is combined with the red corpuscles, even if only loosely, so that is very easily displaced by oxygen. Experiments on rabbits are amply sufficient, only great care is needed at the extraction of the blood, as it must not be exposed to the air too long.

(Correspondence evoked by this article will be given in our next.)

STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from January 1st to February 28th, 1889 :—

					London.	National	Victoria.
Number of Patients attended ...					—	3838	1899
Extractions	{	Children under 14	...	...	1018	547	1462
		Adults	...	...	1790	921	
		Under Nitrous Oxide	1736	1245		210
Gold Stoppings	...	...	...	...	774	161	92
Other Stoppings...	...	...	...	...	3665	1005	181
Advice	...	...	...	...	388	818	—
Irregularities of the Teeth	...	...	...	...	275	140	—
Miscellaneous and Dressings	...	...	...	...	930	382	480
Total					...	...	...
					10,585	5,219	2,425

THE DENTAL RECORD, LONDON: APRIL 1, 1889.

HIGHER QUALIFICATIONS IN DENTISTRY.

THERE has for some little time past been a feeling of uneasiness abroad respecting dental qualifications. This feeling which has been somewhat vague and indefinite, was probably occasioned in part by a dissatisfaction with the examination for the L.D.S. and the title conferred by it, and in part, by a yearning for a higher qualification with its necessarily increased scope of study and examination. There may have been something beyond these, but the reasons noted are probably those which lay nearest the surface. This feeling of dissatisfaction took somewhat more tangible form by being embodied in a series of resolutions—originating in Scotland—which were passed by some of the branches of the British Dental Association, calling upon the Association to take action in the matter of supporting the Scotch universities in seeking the power—at some future date not defined—of granting higher degrees in dental surgery. The subject was brought definitely before the Association at its last annual meeting, and referred to the business committee. From a report published of the last meeting of the Representative Board, it would appear that the committee referred to, delivered its report in the following terse terms:—"That after mature consideration the business committee cannot see its way to recommend any measure for obtaining higher qualifications in dental surgery, other than that already provided by the diploma of the L.D.S." Thereupon an exhaustive discussion of the whole question took place, and, as a result of the free interchange of opinion on this subject, we venture to prophesy that we shall not hear much for some years to come of this hankering after higher degrees.

That this result is one to be desired ought to be patent to all those who are sufficiently thoughtful to gauge the requirements of the profession at the present juncture. The

Dental Act has already done much for us, and has done more than anything else could in the short space of eleven years—but it cannot be expected to do impossibilities. It has been unable as yet to make our countrymen understand thoroughly what dentistry is, and how it stands in relation to the public; but the process of education is, nevertheless, proceeding slowly, and people are just beginning to appreciate the fact that an L.D.S. is a specially qualified dentist, who is—or ought to be—imbued with correct ideas of professional ethics. Would it not be a thousand pities that just as the public was beginning to grasp the meaning of the present title, it should be confused by the introduction of additional dental qualifications? That ignorance of the present dental title *does exist*, even among those who ought to know better, is emphasised by a fact which came to our notice and which we can vouch for. Two licentiates in dental surgery attended—not so very long ago—at the Hall of the venerable Society of Apothecaries, Blackfriars, for examination for the L.S.A., and were demurely asked by more than one of the examiners what the letters L.D.S. meant! If medical men are so ignorant of the title of their dental brethren, what shall we say of the public?

Another objection to a higher degree is one which affects us seriously, and which was touched upon recently by an examiner of some experience in no uncertain terms. Whether our teaching is at fault, or whether our men are not imbued with sufficient earnestness of study, the fact remains that only a *small proportion* of our students could reach the standard of a higher degree; and that unless a mere farcical examination were instituted, the number of the successful men would be extremely limited. It would seem that the indications all point to the necessity of making the present examination more thorough, and in this way raising the standard of education, rather than by multiplying professional titles.

Lastly, we cannot ignore the fact that in the minds of many, there lurked the hope that in the “higher degrees” lay the pleasant path to a full-blown doctorate. If we could

but probe the depths of the secret hearts of the majority of the agitators, this was the fondling which they dandled before their imaginations. We trust that a doctorate of dental surgery will never exist in this country. We entirely endorse the remarks of Dr. Bristowe (in a report which appears elsewhere), when he says "I hope and believe that dentists are not aiming at becoming 'doctors in dental surgery,' as in America; if the dentist wishes to be a doctor, he should be one in a legitimate way." In Great Britain a dentist who calls himself "doctor" gives the public to understand that he possesses an M.D. degree, and in the absence of the latter he is distinctly sailing under false colours. No doctorate has ever been instituted in this country for any *specialty* of surgery or medicine, and why should we commence with dentistry? We believe that America is the only country where this anomaly has taken place, and already some of her best men are crying out against it. We do not share the objection to the dentist taking the M.D. title if he so prefers, on the ground that he is practising a branch of surgery. There are several specialties of surgery where the titles of "Dr." and "Mr." are equally common, and the matter simply resolves itself into one of individual taste; but we do protest against dentists taking up a false position of tinsel titulary, and thus degrading a profession which needs all our care in building up for a bright posterity.

The Discussion of Papers. The value of any paper on a scientific subject is very much enhanced by a suitable discussion; indeed, the latter may often be of practical service, although the paper itself be what is called "weak." Now, in order to make a discussion of real value, it should be opened by one or more speakers specially deputed for the purpose, who are not expected to utter vapid nothings about a paper which they have only just heard read, and perhaps very badly read, but who have had the opportunity of making themselves familiar with the author's views before coming to the meeting, and deliberately put together their ideas with the object of promoting healthy and efficient discussion. We have often wondered why this

principle—which has proved so useful in various societies—has never been adopted, as far as we know, at our dental meetings. A sub-committee of experienced men has just made its report on the management of papers and discussions at the meetings of the British Dental Association, and yet the point we have referred to has either been overlooked or ignored. A fair trial of the method advocated, would, we feel sure, prove an undoubted success.

Iodoform and Iodol. The discussion on antiseptics at the last meeting of the Odontological Society was not a little occupied with the merits and behaviour of iodoform and iodol. Many of the speakers referred to the rapid way in which these drugs liberate their iodine. We think there must be some mistake here, and agree with one speaker who stated that iodol gave off its iodine very freely and discoloured tooth-substance, whereas iodoform, if left in a tooth for years, can be detected not only by its smell, but also by its actual presence (we were going to say in the body) in bulk. We used iodol largely some years ago in varnish, osteo and gutta-percha fillings, &c., but the discolouration occasioned was in some instances so serious that it was abandoned as being most unsuitable for the mouth. We are not in love with iodoform, but are bound to state that we never knew a case of serious discolouration due to its presence.

In the case of epithelioma, reported by Mr. Percy Smith in our last issue, it should have been noted that the patient was under the care of Mr. Leonard Matheson.

REVIEW.

TRANSACTIONS OF THE AMERICAN AND SOUTHERN DENTAL ASSOCIATIONS. Philadelphia: S. S. White. 1889.

WE have received a copy of these *Transactions* compiled by the Publication Committee, Messrs. Cushing, Harlan, and Darby. The volume comprises nearly 300 pages of matter, and shows evidence of careful compilation. The discussions appear to be fully reported; there are several good illustrations; and the general arrangement is admirable.

ANNUAL DINNER OF THE DENTAL HOSPITAL OF LONDON ATHLETIC CLUB.

THE members of the above club and their friends dined together at the Holborn Restaurant on the 2nd ultimo. Covers were laid for about 150. That the dinner was so distinct a success was due, we believe, in no small measure to the indefatigable secretary, Mr. J. F. COLYER. We make no apology for giving a somewhat full report of the proceedings, believing with Sir EDWIN SAUNDERS and other speakers, as we do, in the value and importance of athletic sports in developing successful men of business. The music, which was given by the members of the Musical Society, aided by Mr. HERBERT HARRADAN and Mr. BOB RAE, fully sustained the well-earned reputation of the hospital. Excellent as the speeches were, one almost grudged the time which curtailed the songs. An admirable selection from "H.M.S. Pinafore" was rendered by the Musical Society in a most creditable manner.

Sir EDWIN SAUNDERS occupied the chair, and was supported by Sir WM. MACCORMACK, Drs. BRISTOWE, MITCHELL BRUCE, WILLCOCKS, MOTT, CROSBY, GAMGEE, STEVENSON, BRODIE SEWILL, STACK, HEWITT, and DUDLEY BUXTON; and by Messrs. CHRISTOPHER HEATH, J. BLAND SUTTON, HY. SEWILL, MORTON SMALE, JULER, OWEN, SIBLEY, TRIMMER, CARTER, and numerous members of the Hospital staff.

The CHAIRMAN, whose rising was greeted with prolonged cheers, gave the toast of "The Queen" in felicitous terms.

This and the other loyal toasts having been duly honoured,

The CHAIRMAN again rose and said, Gentlemen, I now give you "The Navy, Army, and Reserve Forces." It is a dictum which moralists are ever inculcating that the possession of wealth is not an unmixed blessing; that it increases our responsibilities and anxieties at the same time that it increases our means of enjoyment and the gratification of our tastes. I can call to mind the experience of a somewhat distinguished member of our profession who has long since joined the majority, that towards the close of his life he developed a craze for collecting works of art—pictures, cabinets, ivory, china, and so forth—and when at last he had succeeded in collecting a considerable share of these treasures, the anxiety to protect them from burglars, and the fear of the daily ministrations of the unæsthetic housemaid, robbed him of his peace of mind, so that he once more sighed for the days when his possessions were less numerous and less valuable. Now it seems to me that this is somewhat the case with our great and prosperous country at the present time; how to make ourselves impregnable at all points is a question which largely occupies our minds and the public press. For our protection we must look to our Navy, our Army, and, if necessary, our Athletic Club, and we may do so without fear—with the Germans, when their beloved Rhine was threatened, we may say:—

"Have thou no fear! this faithful band
Will safely guard our fatherland."

In conclusion, I beg to couple with the toast the name of Mr. Morgan.

Mr. MORGAN in responding said, Sir Edwin Saunders and Gentlemen, I feel sure that the loyalty and valour of the Athletic Club would not have been satisfied

if the toast which you have proposed had not been given, and I feel very great regret that no member of the Navy or Army is present to do justice to it, and that therefore it falls to the lot of so very reserved a member of the reserve force as myself to do so. I think the country is to be congratulated that the Government is holding out a prospect that our vast possessions, to which the Chairman alluded, will be more adequately guarded in the future than they have been in the past, a prospect which I hope will be fully realized. I am confident that if the members of the Dental Hospital of London are called upon to defend their Queen and country they will do their duty, and I may add that their instruments will neither bend nor break.

The CHAIRMAN then rose to propose "The Dental Hospital of London Athletic Club" and said, Gentlemen, in commending for your warm acceptance the toast of the evening, I will content myself with stating a few obvious reasons why the Athletic Club of the Dental Hospital of London deserves our good wishes and support, leaving to the indefatigable secretary and to his energetic brother, who is associated with him, to furnish you with the details of the achievements of the club during the past year. I think in the first place that it is very gratifying to our students of the Dental Hospital of London that they are able to hold their own with any body of students in the Metropolis. Then, I think, gentlemen, it may be regarded as a very hopeful sign for men who are about to dedicate themselves to the practice of a somewhat fatiguing profession to be found throwing themselves with ardour and success into our manly English sports and pastimes; it indicates that they are of the right sort, and have the necessary health, energy and stamina for a useful and successful professional career. Nor is it the mere possession of the necessary hardness and power of physical endurance, nor the proper developement of physique that we may congratulate ourselves upon: there is also the moral training, the value of which it is not easy to over-estimate. The members of such clubs while they strive most strenuously for the mastery, do so in accordance with certain recognised rules and regulations which make it impossible for a man to take a mean advantage of his rival competitor, and this chivalrous feeling never leaves him and is very valuable in after life. Pre-eminence thus frequently converts what might otherwise be envious detraction into generous appreciation, as Colonel Dumas, in the charming play of the late Lord Lytton, "The Lady of Lyons," expresses it:—

"It is astonishing how fond I am of a man when I have fought with him."

Further, I think the prevailing taste for athletic exercises furnishes the best possible answer to the sinister suggestions as to the degeneracy of the race; men who rush voluntarily into these encounters must be supposed to possess a super-abundant amount of vitality and energy. For these and other reasons I commend this toast to your consideration, but, before sitting down, I may mention, without trenching upon the ground that the secretary will take, that the Football Cup for 1887-8 was won by Mr. Burton, and the Lawn Tennis prize—a bat presented by Messrs. Ash—was also won by Mr. Burton. In cricket, the "average" bat—given by Messrs. Ash—was awarded to Mr. J. F. Colyer, while Mr. A. R. Colyer obtained the "average" bat presented by the cricket

branch. Mr. J. F. Colyer also secured the prize for the best bowling average. After relating some amusing and interesting personal reminiscences of his boating days, Sir Edwin Saunders concluded by giving the toast, coupled with the name of the secretary, Mr. J. F. Colyer.

Mr. J. F. COLYER, who was received with prolonged cheering, said: Sir Edwin Saunders and gentlemen, it is with great pleasure that I rise to respond to the toast. The presence of Sir Edwin Saunders, the enthusiastic reception which has been accorded to the toast, the presence of so many distinguished visitors, and the full representation of the staff, is the best guarantee that your good wishes are cordially with us. Sir Edwin Saunders has, in the course of his eloquent speech, given you several excellent reasons for giving the Athletic Club encouragement and support, and I hope before I sit down, to show you by some detailed references to our achievements, that that support has not been unmerited. In the football field we have played eleven matches, and I am happy to say we have not lost a single one. Amongst our victims I am proud to think that we can boast a general hospital. The football team contains some excellent players, and I should like specially to mention the names of Messrs. Bull, Bromley and Burton; I feel sure that the club will agree with me that to their services our successes were greatly due. Turning to the Lawn Tennis section, I regret to say that the unfavourable weather has prevented our playing so many matches as would otherwise have taken place, but I may mention two very successful encounters, one being for the captaincy, won by Mr. G. H. Dickenson, and the other the handicap. With reference to the coming season the outlook is extremely promising. I may state that we have amongst us the winner of the Hospitals Challenge Cup. The cricket section has done its part to sustain our general reputation. During last season we played 15 matches, winning eight, losing four, and drawing three, two of the latter being drawn in our favour. Amongst the vanquished were our friends the "National Dentals." As to the future, we are relying upon such excellent recruits as Mr. Forsyth, who comes with a good reputation from Manchester, and Mr. Farebrother, from Salisbury, to help us to retain the laurels we have already won, and still further add to them. Passing from the field sports division of the club, my remarks would not be complete without a reference to what perhaps may be called an innovation; but if so, it is a very excellent one, which not only gives a large amount of pleasure to the active members of this branch of the club, but to many others besides, I allude to the Musical Society, under whose care the whole of the musical arrangements of this evening are. They have also done good service by assisting at our smoking concerts. This branch of the Athletic Club, I may say, is a valuable and thoroughly appreciated acquisition. Before leaving details, I must tell you what you will all be glad to hear, viz., that we have a balance. Last year our balance was £21; our Chairman has kindly given us his usual cheque for 10 guineas, and we have a balance of £30 to carry forward. Having shown you that the club has been successful, I should like briefly to refer to the reasons of its success. First and foremost I would put the hearty encouragement and support that we have received from our staff; to them, in no small measure, is the thriving condition of our club due. The next

and no less important factor, is the earnestness with which the students have taken up the matter. When I tell you that out of 80 students 75 belong to the Athletic Club, it will be recognized that the students themselves are a good guarantee that the club will not languish and droop, at any rate not in the near future. I will not detain you any longer, further than most sincerely and heartily to thank Sir Edwin Saunders for his presence and for the cordial support he has always given us.

Mr. A. R. COLYER, whose universal popularity was evinced by the loud and repeated calls for him, also briefly responded.

Dr. BRISTOWE, who met with a very cordial reception, in proposing the toast of "The Dental Hospital of London and London School of Dental Surgery," said : The question of special hospitals is one which has been largely discussed, both by the public and the profession for many years past. No doubt there are some persons who look upon all special hospitals as unmixed evils, and others who regard them as unmixed blessings. I think that while there are many such hospitals that we could well do without, that do not aid in the advancement of medical and surgical science, nor render any service to the public to adequately warrant their special existence, there are many which promote knowledge in many ways. No one doubts the importance and necessity of the hospitals for the insane. The establishment of Moorfields hospital has done more than anything else to forward ophthalmology. The same holds good with regard to skin diseases, and more particularly does it hold good with regard to dental surgery. The advancement of dental surgery has been connected with the Dental Hospital of London, of which Sir Edwin Saunders is so great an ornament. I think that we must all congratulate ourselves upon the establishment of this hospital in London. It has placed the profession on a higher plane. It has removed it from the hands of druggists and from the hands of persons (who I by no means class druggists with) who are quacks. And it has removed it from the hands of ordinary medical practitioners who, from their training, cannot satisfactorily deal with a branch of surgery which from its multifarious ramifications requires special study. More especially, it has brought dentists to the position of a part of the great profession of medicine. I hope, and believe, that dentists are not aiming at becoming "doctors in dental surgery," as in America ; if the dentist wishes to be a doctor, he should be one in a legitimate way. Having referred to the excellence of the arrangements of the Dental Hospital of London, and of its teaching, Dr. Bristowe concluded by passing a warm eulogium upon Sir Edwin Saunders, and coupled with the toast the names of Mr. Sibley and Mr. Morton Smales.

Mr. SIBLEY, in responding, dwelt at some length upon the fact that the present status of the profession was mainly owing to the works of the grants of the past generation who had initiated such good work. It was a comparatively easy task for those of the present day to continue to work when it had once been put upon a sound basis. He also endorsed Dr. Bristowe's able remarks on the question of special hospitals and enlarged upon the subject.

Mr. MORTON SMALES, who was greeted with continuous applause, said that the enthusiastic way in which the toast had been drunk and the kind manner in which the individual who had been appointed to reply had been received, was an

assurance of the admiration which was entertained for their *alma mater* and for this he begged most cordially to thank them. The word reminded them how close was the analogy between their mother in the flesh and their mother in the profession. He took it that the life of the hospital was its staff and that the material building without that life would be quite valueless. And not only did that mother of theirs take care of their training, but more than that—she was always watching over her students; she was always delighted to hear of their good deeds, and grieved if she heard of any selfish or unprofessional action—he was glad to say that very few of these latter came to her ears. She watched over them not only as students but also in their after professional career. She watched over them too in their play and rejoiced most heartily in their successes, whether at cricket, football or lawn tennis. She was very solicitous about one thing: she wished to see an inter-hospital challenge cup placed in the building of the Dental Hospital of London. He had sufficient confidence in the students to believe that this was possible, and was quite sure that if they would be as thorough in their play as they were in their work it must come very shortly. He concluded with an allusion to the all embracing character of the Athletic Club and again expressed his thanks for the kind way in which the toast had been received.

Mr. STORER BENNETT in proposing "The General Hospitals," dwelt upon the fact that the Dental Hospital of London was most deeply involved in the success of the General Hospitals. The dental students had to pass two years, not only in the wards of the general hospitals, but also in their classes; this was a great advantage and a distinct gain to both the dental and the general student: the former acquired a habit of concentration and a breadth of judgment, while the latter was able to appreciate the great advances that had been made during the last few years. Having referred to the formidable, but he believed friendly rivalry that had been foreshadowed from Guy's, Mr. Storer Bennett concluded by expressing his own earnest wish that the day might not be far distant when dental students would not only be in part, but entirely members of the medical profession. He commended the toast to their hearty support, coupled with the names of Dr. Julius Pollock and Mr. Bland Sutton.

Dr. JULIUS POLLOCK in briefly responding, said that he had great pleasure in stating what was probably known to many present, viz., that amongst the most brilliant of students at Charing Cross Hospital, to which he had the honour to belong, those who distinguished themselves most and worked hardest, were those who had chosen dentistry as their profession.

Mr. BLAND SUTTON expressed his satisfaction in being asked to respond to the toast. He belonged to a hospital—and had done for the past eleven years—which numbered amongst its staff Sir John Tomes and Mr. Jas. Smith Turner, and upon its active staff Mr. Storer Bennett, whom they could always consult with confidence. Middlesex Hospital had at one time, and for many years enjoyed a reputation for sports, but until the last few years it had fallen off. In his student days he used to think that those who were foremost in sports were most backward in studies; but his opinion had changed, and it was a notable fact that with returning prosperity in sports at Middlesex they had an

increase of students and a more flourishing condition of things in the class rooms.

Mr. DAVID HEPBURN, in a few felicitous sentences, proposed "The Visitors," coupled with the name of Dr. Theodore Stack, of Dublin.

Dr. STACK, who was very heartily received, said that he had been called upon rather unexpectedly to reply to the toast, and he feared that the infirmities of his speech would not at all represent the warmth and sincerity of his sentiments. Like the Saxon who visited Ireland, and found it raining there for three successive days, returned in disgust to his own country, under the firm conviction that it was always raining in Ireland, so he (Dr. Stack), from the fact that he never came to England without being asked out to dine, might not unreasonably assume that they were always dining in England. He had been so often their guest that he no longer felt like one, but was so much at home that he felt like one of themselves.

Sir WM. MACCORMACK, in a few appropriate sentences, proposed the health of the Chairman, which Sir Edwin Saunders briefly acknowledged.

An improvised smokers' concert brought a very enjoyable evening to a close.

ANNOUNCEMENTS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

NEXT meeting on Monday, April 1st. Papers by Mr. Jonathan Hutchinson, F.R.S., "Notes on Surgical Diagnosis of the Teeth." Casual Communication by Mr. C. S. Tomes on "Epithelioma of Upper Jaw."

STUDENTS' SOCIETY OF DENTAL HOSPITAL OF LONDON.

NEXT meeting on May 13th, at 7 p.m. Paper by Mr. S. Read on "Syphilis as it Affects the Mouth."

ROYAL COLLEGE OF SURGEONS OF IRELAND.

The next examination for the Licence in Dentistry will be held on Monday, April 8th, and following days. Applications must be lodged with the Registrar on or before March 25th.

VACANCIES.

DENTAL HOSPITAL OF LONDON.

Assistant Dental Surgeon. Applications on or before April 2nd, to the Secretary of the Hospital.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and *Answers* are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

ETHICS IN SUPPLYING ARTIFICIAL TEETH.—A is a domestic servant receiving ordinary wages, who consults B, a dentist visiting a London suburb periodically. B tells the patient that her mouth is in a "shocking state," and advises the extraction of some twenty or thirty stumps and teeth under gas. He undertakes to do this, and to put in a permanent case *within two months* for a fee of sixteen guineas. A ultimately consents, and is required to pay a deposit of five pounds, and B immediately takes impressions of upper and lower, with teeth and stumps *in situ*. When A gets home and consults her friends she is told that the fee is excessive, and, being generally dissatisfied, writes to A saying she has changed her mind, and would like the five pounds returned, less a reasonable amount for consultation. B refuses to refund any portion of the money, and A having lost all confidence consults another dentist, who recommends her to apply for her money. (1) Can A legally claim any portion of money paid? (2) Is B guilty of unprofessional conduct?

* * (1) A had better consult a solicitor as to the legal aspect of the case. We are inclined to think that the strong points would be:—The undertaking to provide a *permanent* set of teeth within two months after clearing out the mouth of stumps, &c.; the taking of impressions then and there as conveying a false impression that the case was already begun. (2) B was not guilty of unprofessional conduct in taking a deposit, although this is not done in high class practices. Taking into consideration the position and means of his patient, and also the fact that the case had not been begun in any sense, B would have upheld the dignity of his profession by at once returning the deposit, after deducting a reasonable fee for consultation. We are not sure that he was legally bound to return the money, but it would certainly have been more honourable to have done so, and this is what we think the majority of reputable practitioners would do under the circumstances.

QUERIES.

PLATE GAUGE.—I should be glad if any reader of the RECORD could inform me what gauge we are to go by for plate and wire, in making crown and bridge work, and where they are to be bought?—YORK.

DUPLICATING COMPOSITION.—I should like to elicit a few remarks from any of your readers who use duplicating composition. I find, after using it a few times, that it gets thick and rotten, and the duplicates not near so good as when fresh. I have tried adding glycerine, but it does not seem to make it more fluid, nor yet improve it in any way.—YORK.

A CORRESPONDENT from Rochdale cannot be answered as he has sent neither name nor address.—ED. DENT, REC.

CAPSICUM PLAISTERS.—The plaisters now kept at the dépôts are sold at simply extortionate prices. Can anyone tell me how they may be home made? I am not altogether certain that they are more useful than the time honoured application of iodine and aconite; have any of your readers formed a definite opinion on the subject?—DENS.

ANSWERS.

COPPER AMALGAM.—In answer to W. G.'s enquiry about cervical wasting when Sullivan is used, I would suggest that careless packing has something to do with it. If W. G. would adopt the Kirby method of packing *all amalgams*—first half wet and second half dry—he would find his results more satisfactory. If he would do this and communicate his opinion on the method, I should feel obliged.—DELTA.

SMOKING.—M.R.C.S., L.D.S., may safely tell his patients that smoking is not injurious to the teeth, but on the contrary a good antiseptic. An abstract of a paper by Dr. Tassinari on "Tobacco and Bacteria" appears in the December 1888 number of the DENTAL RECORD.—OLD FILE.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

THE BRITISH DENTAL ASSOCIATION.

To the Editor of the DENTAL RECORD.

SIR,—It is much to be regretted that your correspondent "Repoussé," whose letter appears under this heading in the last number of the RECORD, has not stated in plain terms the exact nature of his complaint. It is certainly the earnest wish of the Association to receive into its ranks every respectable practitioner on the *Dentists' Register*, and there exists no bar to the admission of any such individual. All that is needed of the candidate is, that he should be a *professional* man, governed by the code of conduct which is observed by members of every profession; and particularly that he should not seek to attract practice by advertising. The forms of admission to the Association are very simple, and I would suggest whether "Repoussé" may not really be under some misapprehension which might be easily cleared up if he so desires it. Indeed, it is difficult to know how any respectable dentist can remain outside the Association—not to speak of high grounds which might influence him—he ought to join if only for selfish reasons. The Association is virtually the authority (delegated by the Medical Council) to enforce the Dentists' Act, and if it were not for the watchfulness, care and action of the Association, that

Act, like so many more, would probably remain a dead letter. There is no Public Prosecutor in this country to take cognizance of violation of special Acts of Parliament like this one ; and without a public body to prosecute, offenders would go free and unmolested. As it is, although attempts are being made to evade the law— attempts which are becoming daily more difficult and dangerous—the Act is working a most salutary change to the direct personal benefit of every decent dentist. Surely it is not too much to ask then, that every eligible practitioner should join, and by his subscription aid in promotion of these objects. The leaders give, and have given, time and money, and have made many sacrifices ; all they ask to complete their task is the passive aid of those they are trying to serve. The Association needs funds ; every guinea annually subscribed is of importance ; every name added to the list of members gives more strength to the body. Let “Repoussé,” therefore, join us and bring his friends, and I will vouch for it that if he and they can suggest any reform in the constitution or administration of the Association, it will be discussed with impartiality, and will be adopted with alacrity if it can be shown to promise any advantage to the Association or the profession.

I am, &c.,

A MEMBER B.D.A.

London, *March 4th*, 1889.

To the Editor of the DENTAL RECORD.

SIR,—May I ask your correspondent, “Repoussé,” to be a little more explicit. What were the “preliminary barriers?” and what “the regulations as they at present stand that are injurious to the Association and vexatious to a number of its well wishers?”

I can assure him that the Association is most anxious to be of service to our profession, and to that end always glad to welcome those who will join its ranks ; but, as in all other societies, it is necessary that a candidate for membership shall be duly proposed by three other members of the Association. For the benefit of your readers I have copied the requirements of the Association for those seeking to become members.

“1. A person who is registered in the *Dentists' Register* shall be eligible for election as a member of the Association, provided that he be of good character ; that he does not conduct his practice by

means of the exhibition of dental specimens, appliances, or apparatus in an open shop, or in a window or in a show-case exposed to public inspection ; or by means of public advertisements or circulars describing modes of practice, or patented or secret processes ; or by the publication of his scale of professional charges.

"2. Any registered practitioner not disqualified by any Bye-law, who shall be recommended as eligible by any three members of the Association (the recommendation of one being from personal knowledge), and who has signed the appended form of application for admission and agreement as to terms of membership, may be elected a member by the Representative Board or by a committee appointed for that purpose by that Board or by the Council of a recognized Branch."

I am, &c.,

MORTON SMALE,

Hon. Secretary, British Dental Association.

"A NEW AND ONLY WAY OF RAISING THE EPIGLOTTIS
BY UTMOST MANUAL EXTENSION OF HEAD AND
NECK."

To the Editor of the DENTAL RECORD.

SIR,—In your February number you reproduce from the *British Medical Journal* an article by Dr. R. L. Bowles calling attention to some reputed anatomical discoveries presented in a paper under the above heading read before the Medical Society of London, last October, by Dr. Benjamin Howard, and discussed at a special meeting called for the purpose by that Society in November.* While Dr. Bowle's article emphasizes the anatomical facts presented as "discoveries"—and as discoveries of great and general value—the extreme simplicity of them in their application for the raising of the epiglottis however, seems to have made him feel as many others have felt after being told them, that in some way or other he certainly must have known them before. With this feeling I thoroughly sympathise. The main purport of the article in question it is difficult to determine, so curiously does it seem to denounce and to claim everything in the same breath. It shows no concern whatever for the life and death questions at issue ; for the acknowledged utility of

* *British Medical Journal*, November 17th and 22nd, 1888.

the new way. The prevailing idea, if there is one, is a complaint of supposed inadequate recognition of alleged work and writings by himself—supposed by himself to have been original. From the title and the bulk of this article, a first glance without reading it, might give the impression that I had been ungenerous; since its publication, however, the principal fact on which the most comprehensive assertions in this article were based, the author, quite unasked, has in a letter to the *British Medical Journal* * generously acknowledged to have been impossible. This encourages me to make a brief statement of facts, some of which are only known to myself, and which may, I trust, allay any misapprehensions which possibly yet remain. Briefly, then, I state (1) Dr. Bowles's name was quite unknown to me until he was kind enough to bring it to my notice by sending me a pamphlet, as he may perhaps remember, in 1881. As he now knows, my reputed anatomical discoveries referred to, were, as he says he has just found, completely published as anatomical facts in the *Proceedings of the Royal Medical and Chirurgical Society of London* in 1878. (2) Since Dr. Bowles's article in your February number, I have, with the aid of two experts, faithfully investigated the question, and find nothing by Dr. Bowles, which, had I seen it before 1878, could have helped me in any way towards the results I then published. The alleged publications pertaining to this subject by Dr. Bowles from 1853 to 1888 inclusive, I find, in fact, to consist of one paper, and of one paper only. The title of this paper was "On the Treatment of Apnœa in the Drowned; the relative merits of the Marshall Hall and the Sylvester method," read before the South-Eastern Branch, East Kent district meeting, November 28th, 1863, and published the following year. My usual index searches on this subject had been under the headings—anæsthesia, anæsthetics, asphyxia, artificial respiration, resuscitation, apnœa, drowning. This solitary paper, under any of these headings, had certainly been overlooked by me, and from being in connection with the proceedings of a local provincial society, this does not seem to me, even now, at all remarkable. This is my explanation of the fact in statement (No. 1). Now for statement (No. 2). As indicated by its title, the sole purport of this solitary paper was to show the superiority of the Marshall Hall method. In this paper is the only published case of apnœa alleged to have been ever treated by Dr. Bowles. Here is the treat-

* *British Medical Journal*, February 16th.

ment : "I at once, though a stranger, introduced my finger into his mouth, and hooked up the base of the tongue." This is all that is said to have been done, and the treatment was consistent. The whole paper is an enthusiastic eulogy of the Marshall Hall method ; and I need not perhaps say that, to the Marshall Hall method, my "new way" is the greatest possible contrast and contradiction. I am aware that here I might stop. I know, however, I should be asked : "But what about the copious extracts which make up Dr. Bowles's article in your February number, under the heading 'On Raising the Epiglottis?'" *Answer* : The first part is *en bloc* from Marshall Hall ; all the rest consists of alleged extracts (several of which are unverifiable) on another and totally different subject. Thus it is stated : "Extract (I) is a letter to the *Lancet* from R. L. Bowles, 1856, and reproduced in Marshall Hall's book on 'Drowning' (1857)." I think it unfortunate that in the *Lancet* referred to, this communication is published by a totally different person, and is signed by Marshall Hall. The experiments mentioned in this letter, moreover, were not original, but were duplicate experiments made jointly by more than one person to verify previous experiments. The original experiments and the others in connection with Marshall Hall's entire work, I have often traversed as his work only, because until now by him only had they been published. I need hardly again say that to everything in Marshall Hall's treatment the "new way" is the antipodes.

The rest of this curiously constructed article is made up with extracts from papers, alleged conversations, articles, &c., on "Stertor." Though a digression, I may call attention to the fact that, even for this, the remedy directed and employed in every published case is also the Marshall Hall method. The very latest article by Dr. Bowles on this subject, and one not quoted in his February article, appeared so recently as three years since the publication of my reputed discoveries. The teachings in this article are illustrated by three cases, and here is in full the treatment ; Case I., "Placed on her side ;" Case II., "When placed on her side the stertor instantly ceased ;" Case III., "On being placed on her side the stertor instantly ceased." At the close of this paper is this conclusion : "These principles apply not merely to apoplexy, but to all apoplectic conditions, especially drowning, chloroform poisoning, etc." Thus, between the paper of 1863 and this article of 1888, there is not only consistency, but identity—both of them insisting

loyally and exclusively upon the one treatment: in drowning, the Marshall Hall method; in stertor, equally the Marshall Hall method. One word in answer to a possible question respecting two engravings in the January 12th article of the *British Medical Journal*. These were taken from a paper published in 1860 under the title "On Stertor." The explanatory notes beneath them then were: "Fig. 1, showing the position of the tongue with the mouth closed." "Fig. 2, showing the position of the tongue with the mouth open." Neither in these explanatory notes, nor in the then accompanying text, did a word about raising the epiglottis appear. These engravings are reproduced now under the heading "On Raising the Epiglottis," and with the former explanatory notes omitted. This might easily have caused one of these engravings to have been at first glance misleading. On the second glance, however, it is seen that, in the shut mouth engraving—at which the chin is at its highest point—the position is one of slight but positive flexion of the head towards the sternum. By reference to the *British Medical Journal* of November 17th, it will be seen that above this point, or at the right-angled position, is my zero—it is just here I find in its completeness each obstruction it is the special object of my "new way" to remove. It is at this point my "new way" by manual extension simply begins.

An alleged conversation with a layman in 1880, as afterwards reported to Dr. Bowles by that layman is neither within the dates nor the scope of evidence in this case. Two distinctly misleading statements at the beginning of the article, and unusual methods in other parts of this article I gladly pass over, as my object is not complaint on my own part but only to allay unnecessary misapprehension, and possible discomfort on the part of others. For the sake of accuracy, however, there is one fact I would here call attention to. In the *Journal of Anatomy and Physiology*, January, 1889, page 269, reference (6) are references by Professor Howes to the following alleged works of Dr. Bowles, "'Stertor in Animals,' see *Transactions Medical and Chirurgical Society of London*, vol. 48, 1870, and 'Stertorous Breathing in Apoplexy,' London British Medical Association, 1888." At the last meeting of the Anatomical Society of Great Britain and Ireland, I stated these publications did not appear to exist. As Dr. Bowles acknowledged in his reply, that he had neglected to have these papers published, much trouble might be saved other readers if Dr. Bowles would be good enough

to have this explanation published in the next number of the *Proceedings* of that Society.

In my recent paper, I admit, I did refer to Dr. Bowles. The memory of his kindness in once sending me the pamphlet referred to I fear overcame my sense of relevancy; and reciprocally I went out of my way to correct what I thought to be an anatomical fallacy in the alleged shifting of the tongue by shutting an open mouth, said to have been practised in addition to pronation in a single case of stertor, though this case was not verifiable by either of two references given in the February article in the RECORD.

Beyond this, the fairest analysis of Dr. Bowles's article, alleged work, and supposed writings of which I am capable, leaves me entirely at a loss to find anything to refer to, except that what there is of it shows a loyalty to the Marshall Hall method, and its adaptation to the correction of stertor. In view of the manifestly different feeling of Dr. Bowles, however, I can sincerely say that I should be prompt to recognise anything which he had really published before 1878 which he may yet adduce to the contrary effect, and what I say of him would of course equally apply to every person thought to be concerned.

I am, &c.,

BENJAMIN HOWARD.

GOSSIP.

THE writer of a recent text-book on Operative Dentistry must be fairly puzzled to know what impression his work is likely to have on those who read it. His critics are certainly not agreed, if we may judge from their expressed opinions. One says: "We commend the volume to all who are interested in its subject." Another writes: "It not only lacks the essential qualities which a text-book requires, but its teaching is in many important places so vague, obscure, or altogether erroneous, that if acted upon it would infallibly lead the pupil into difficulty and perhaps disgrace." Such adverse opinions may probably prove a good advertisement, and tempt the curious to buy this marvellous book.

THE temptation to "throw physic to the dogs" may, under exceptional circumstances, prove overpowering. A lady writing to her dentist recently, apologised for not keeping an appointment by

stating that she found it very difficult to "get about," as she had been suffering from lameness more or less for the past four years, as the result of rubbing the sole of one of her feet with a powerful liniment as a cure for "neuralgia." It was not stated whether the neuralgia was facial—it may have been.

WE were pleased to receive a copy of a new quarterly, "The Dominion Dental Journal," edited by Mr. W. Geo. Beers of Montreal. The first number is creditable in every way, and we wish the editor success in his new venture.

THE annual dinner of the Athletic Club of the Dental Hospital of London (of which we give a lengthened report elsewhere) was a great success. The company was numerous, and the speeches long—perhaps too long, but then athletics pride themselves on being "good in the wind."

WE are pleased to find that a temporary museum is to be formed at Brighton in connection with the forthcoming meeting of the British Dental Association, under the direction of a committee, of which Mr. Walter Harrison is secretary. The following is a list of the sections proposed :—

SECTION I.—*Microscopy*.

SECTION II.—*Anæsthesia* (including apparatus, ancient and modern).

SECTION III.—*Pathology*. Specimens of Diseases of Cementum, Exostosis, &c., Riggs' Disease with brief notes. Models of Redundancy of Teeth, Deficiency of Teeth.

SECTION IV.—*Surgical and Mechanical*. Models of Irregularities of the Teeth (with appliances for correcting), Deformities of the Mouth (illustrating specially cleft palate cases, with examples of obturators and artificial vela).

SECTION V.—*Operative*. Crowning and Bridge Work.

SECTION VI.—*Manufactures*.

From the above list it would appear that the committee would like *specimens* of "Riggs' disease." So would a good many other people.

Dr. W. N. MORRISON demonstrated the making of broaches from wrapped piano-wire, at the last meeting of the Missouri State Dental Association. His manner of making them is to take a piece of wrapped wire long enough for the broach and handle, about four inches: he unwinds the outer wire from about half of the piece, letting the remainder serve as the handle. The uncovered portion is ground into the form of a broach by the use of two corundum wheels of the same diameter, placed side by side on the lathe mandril, leaving a slight groove where they touch. The wire is held in this groove and ground to the proper shape: the wire is kept revolving to grind it round. Dr. T. G. Vernon improved this broach by soft-soldering the end of the outer wire.—*Archives of Dentistry*.

A DEPENDENT CITIZEN.—The following story is told of a well known member of the bar in Allegany County, New York, than whom there never lived a gentler, kindlier spirit. With his scholarly attainments and profound knowledge of legal lore, he possessed the simple dependent nature of a child, and, it may be added, a child's utter guilelessness and faith in his kind. His wife, fortunately for the worldly success of the pair, was shrewd and practical in a marked degree; upon her strong independence of character Judge C—— leaned heavily, except within the domain of his profession, where, curiously enough, his opinions were singularly prompt and infallible. In the domestic and social circles, however, he deferred to Mrs. C—— in the simplest matters, and so habitual had this state of things become that it did not occur to either of them that there was anything unusual in it. From donning his winter flannels to leading a card at the whist table he never pretended to act without "Helen's" sanction and advice. But one day he showed his condition of mental servitude in a really astonishing way. He was suffering from toothache and his wife sent him to the village dentist for relief. Obediently he went, got into the chair, and opened his mouth for the preliminary examination. "Which tooth is it aches, judge?" inquired the dentist, poised the forceps. There was a moment's hesitation; then the judge sat up from his reclining position, and looking innocently at the dentist, said, in all good faith, "Well, now, I don't know; I'll go home and ask Helen."—*Harper's Monthly*.

[It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 5.

Original Communications.

NOTES ON THE VALUE OF PERFECT SIGHT IN SUCCESSFUL DENTISTRY.

By WILLIAM LANG, F.R.C.S.Eng.,

*Ophthalmic Surgeon to the Middlesex Hospital, Assistant Surgeon to the Royal
Ophthalmic Hospital, Moorfields.*

THAT a dentist who desires to fill a cavity successfully should possess perfect sight, seems a simple and obvious truism which does not call for any comment ; my personal experience, however, both as a patient and more especially as an ophthalmic surgeon, has led me to the conclusion that, however much such a proposition may be accepted in principle, in practice it is lamentably ignored.

A great number of dentists at the present moment are conscientiously working under conditions which, unsuspected by themselves, must inevitably lead to a large percentage of failures. I suspect there are many such who daily ask themselves how it is their work fails prematurely, who criticise each and every detail of the complicated process of putting in a gold filling in order to find the cause, but who never for a moment consider that the defect lies in their own deficient eye-sight.

They say to themselves when their attention is drawn to the subject, "whatever my defects may be as an operator, deficient eye-sight does not rank among them"; and to support this contention, they refer to their ability to kill a bird on the wing, to see a ship on the horizon, or to read the smallest print, all of which, to the uninitiated, are sufficiently conclusive proofs of perfect sight.

That such standards are quite delusive is the daily experience of ophthalmologists, who require the fulfilment of much more delicate and accurate tests before being satisfied of the absence of an error of refraction, which would be sufficient to wreck any number of fillings,

although at the same time slight enough to delude the operator into thinking that he possessed perfect sight.

That a perfect gold filling, under ordinary conditions, may reasonably be expected to last many years, will, I think, be acknowledged by every dentist ; but, in my capacity as patient, this has too often not been my experience, and it was in great measure this want of success on the part of several dentists that first led me to pay attention to their eye-sight, as a possible explanation of these failures, as I was satisfied that it was not due to want of skill and knowledge.

As ophthalmic surgeon to a hospital where a large number of dentists are educated, I have had ample opportunity of testing this point, and I can only state that many of the most rising and successful dentists who have studied at that hospital have personally enabled me to confirm these views.

A few examples will make this clearer :—A. B., a dental student, complains that his eyes ache after three or four hours' work at stopping; he thinks it is due to a cold, since his sight is so perfect. I found, however, that his vision did not come up to the normal standard, which surprised him, since he was able to recognise his friends a good way off and to see a ship on the horizon. This want of perfect sight was due to a slight degree of *astigmatism*, a condition which is fatal to good stopping, since it is impossible to see perfectly two lines at right angles to one another, at the same time, therefore, two of the four margins of a filling must be indistinctly seen, being out of focus ; consequently a slight defect in the margin of a gold filling would be readily overlooked in the indistinctly seen edge. This would be repeated constantly and should naturally arouse the operator's suspicion, when he remarks that the failure in his work usually begins in the margin running in a given direction, usually either the vertical or the horizontal one.

C. D. is still young, but has a large practice. He has always been a little short sighted, which he has understood is an advantage in his work ; he thinks, however, that it would be well to have his sight tested. From what I can learn, he is not quite satisfied of late with the result of his work. I find that he can read the finest print with either eye, this in spite of a fairly high degree of *myopic astigmatism*. When this is corrected by appropriate glasses, he still sees the finest print, but now it is quite black and sharp—a great improvement on the unaided eye—which he confirms later on by saying that he does much better work since wearing the glasses. This

patient, as a student, obtained the operating prize at his hospital; his sight, however, must have been much better then than when I saw him. The latter point is easily explained, for in youth the accommodation of the eye can neutralize a certain amount of astigmatism, but as years advance this power of accommodation fails, and as it is essential that both eyes should be normal for the sight to be perfect, in such a case it becomes necessary to wear glasses before the age of forty.

I think these cases are sufficient to illustrate the importance of the subject, and if these brief notes only lead to the discovery by its unsuspecting owner of one defective eye, they will not have been entirely thrown away.

I should, however, advise every dentist, who has not already had his sight tested, to procure a copy of the test types used in all eye hospitals, to place them in a good light at the distance of twenty feet, and then holding a thin book in front of each eye alternately, to see if he can read the letters with perfect ease; and if he has the slightest difficulty, to at once consult his friend the ophthalmic surgeon.

DESCRIPTION OF A BUR FOR REDUCING THE CIRCUMFERENCE OF ROOTS PREPARATORY TO FITTING GOLD CROWNS ON THEM, WITH A NEW METHOD OF SECURING A METALLIC MODEL OF THE ROOT.

By WM. M. GABRIEL, M.R.C.S. and L.D.S.Eng.

THE originators of the method of mounting a gold crown, the attachment of which to the root is secured by its embracing the cervical portion, seem to have fitted their crowns without any special preparation of the root. It has, however, been long recognised that the essential detail on which the permanent success of the work depends, is the accurate fit of the collar or ferrule, and that the first step towards this is the proper shaping of the root. This, in many cases, can be most easily and quickly done by means of a bur rotated in the engine.

I used an ordinary sugar-loaf bur, with Dr. Starr's trimmers, for this purpose, until it occurred to me to try and combine the two instruments.

The result of my efforts is what I have called a "Crowning Bur."* The cutting portion tapers gradually from the shoulder, which is slightly sloping, so there is no danger of forming a ledge on the root with the point, which must necessarily be the case if the bur be the same diameter throughout, and the end left sharp and square.

I also claim that, the shoulder being sloping, enables the bur when used far back in the mouth to better follow the surface of the root than if made rectangular.

After having cut the root down to the proper level and removed the remaining enamel with chisels, discs, or Dr. Mitchell's scaler, I run round the circumference of the root with a crowning bur, the hand-piece being firmly grasped and the thumb resting on an adjoining tooth, the root, or gum.

Care should be taken not to reduce the root too much, which, when such a quick cutting instrument is used one is very apt to do; a little past the parallel is quite sufficient. Having satisfactorily shaped the root, the next step is to fit a collar to it, and although a misfit will be the probable result if the crown be made entirely by the model, much assistance besides relief to the patient will be ensured if the fitting of the band can be done out of the mouth.

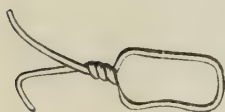


FIG. 1.

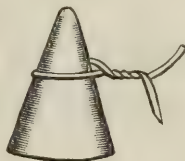


FIG. 2.



FIG. 3.

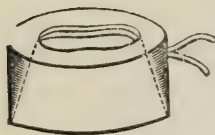


FIG. 4.



FIG. 5.

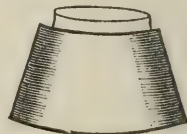


FIG. 6.

This done, the band may be tried on the root, closed a little, soldered and trimmed, and then driven on to the root with a mallet.

Where any considerable portion of tooth substance is allowed to remain above the gum, an impression can be taken in moldine, &c.; but where the root is level, or nearly so with the gum, it is best to

* As Mr. T. G. Read has introduced a somewhat similar bur, I may here state that the idea was original with each, Mr. Hallam being in receipt of the drawings and instructions of both before either instrument had appeared.

adopt some other means, as it is difficult on a model, so made, to recognise the limit of the root and where exactly to fit the band.

Reading Richardson's *Mechanical Dentistry*, I was convinced that the idea of fitting a wire round the root and securing a model from this was good ; but striking the loop thus made into a block of wood (*op. cit.* p. 234) or lead (p. 387), or fitting a piece of wood to the loop (p. 228), did not commend itself as likely to give a serviceable model. The method I generally employ is the following :— Having fitted a piece of silver suture wire, about No. 20 B.W.G., round the root, and twisted the ends firmly together with a pair of pliers, the loop thus made (*see* Fig. 1) is carefully removed from the mouth (*vide op. cit.* p. 228) ; a cone of wax is then prepared and the loop placed on this (*see* Fig. 2), the surface of wire which rested on the gum margin looking towards the base of the cone. The top of the wax cone is now shaved away with a warm knife to the level of the wire (*see* Fig. 3), and any crevice between the cone and wire filled up with wax by means of the hot knife ; any wax on the outside of the loop is removed. The loop and cone are now inverted, and invested in plaster so as to cover the wire loop, its ends, and the sides of the wax (*see* Fig. 4). When the plaster is set, the wax is melted out and the plaster cut away from inside the loop and also on the bottom (*i.e.*, where there was least plaster), almost to the wire, just leaving sufficient plaster to hold the loop in position.

The plaster mould, having been dried, is placed on a flat piece of moldine and fusible metal poured in ; when cold, the plaster and loop are removed.

The model (*see* Fig. 5) will need a little dressing with a fine file, since the wire used is round, after which the band may be fitted to it (*see* Fig. 6) with confidence.

NITROUS OXIDE NARCOSIS AND THE BLOOD.

(*Criticisms on Dr. Ulbrich's Paper, specially Translated for us*).

DR. A. ROTHMAN writing in the *Vierteljahrsschrift für Zahnheilkunde*, criticises the communication on the above subject of Dr. Ulbrich, a translation of which we published in our last issue. He agrees that nitrous oxide cannot form a stable chemical combination with the hæmoglobin as does nitric oxide or carbonic oxide, for were this the case, the blood would not be able to absorb oxygen, and death would rapidly ensue. With reference to the spectral analysis of

blood impregnated with nitrous oxide, he quotes Preyer, Buxton, and MacMunn, who assert that it is precisely the same as that of oxy-hæmoglobin, that is, there are two absorption stripes marked on the scale between D and E. Making numerous experiments on the human subject, Dr. Rothman found that he was unable to distinguish between the two spectra, but made this observation, that the blood of narcotized persons was more difficult to reduce than ordinary blood, the broad band between D and E, characteristic of reduced hæmoglobin, being longer in appearing after adding sulphate of ammonia in the case of nitrous oxide narcosis blood than when normal blood was used. The broader stripes and the dark aspect of the violet end of the spectrum, as shown in Dr. Ulbrich's plate, as characteristic of nitrous oxide hæmoglobin, Dr. Rothman believes to be simply a matter of the amount of dilution of the blood examined. The absorption bands of certain pigments will make their appearance in solutions of every possible variety of strength, and always at the same portion of the spectrum, but the breadth, their clearness, and the commencement of their shaded border depend only upon the concentration of the solution and the intensity of the light. Using a Bunsen-Kirchhof spectroscope, which allows of the simultaneous examination of two spectra, he found that with one in a thirty-two solution of natural blood and a similar solution of blood drawn from a person narcotised to the full extent with nitrous oxide, that the spectra very nearly corresponded, and that with further dilution, the breadth of the bands decreased equally in both. He therefore concludes that in the inhalation of nitrous oxide there is no chemical combination with the hæmoglobin.

[The subject is of considerable interest, and we hope to hear more about it shortly. One point will be easily cleared up, that is, whether the different appearances of the spectra of normal blood and that of nitrous oxide blood is only a matter of dilution. Dr. Henocque has recently invented a hæmatoscope in which the blood is used undiluted, the two glass plates between which the blood is examined being in contact at one end, and at the other only one three hundred thousandth of a millimetre apart, a short account of which may be found in the *British Medical Journal*, of April 13th, 1889."—ED.]

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ordinary monthly meeting of the above Society was held at its rooms, 40, Leicester Square, on Monday the 1st ultimo.

The President, Mr. HENRY SEWILL, M.R.C.S., L.D.S.Eng., in the chair.

The minutes having been read and confirmed, Mr. A. G. W. Barnard, L.D.S.Eng., signed the Obligation Book and was admitted a member.

Mr. SYDNEY SPOKES, M.R.C.S., L.D.S.Eng., was balloted for and duly elected.

Mr. CHARLES WINTERBOTTOM, M.R.C.S., L.D.S.Eng., was nominated for membership.

The CURATOR (Mr. Storer Bennett) announced that, through the kindness of Captain Lloyd, of the Somersetshire regiment, to whom they had been previously indebted, two specimens had been added to the collection of the museum. The first was the skull of a black Indian bear, and the second, a very interesting specimen of the skull of a Muntjak of Java. As the society would be aware, there were three kinds of deer—and only three that have canine teeth, including the ordinary musk deer and the Chinese water deer, and these have no horns, the canine teeth taking the place of antlers. In the Muntjak they had an intermediate condition, largely developed canine teeth and also horns, a very curious condition, and one of which they had no previous specimens.

Mr. WALTER COFFIN: I think, Sir, I am correct in saying that the Wapiti of North America has rudimentary eye teeth. The first settlers in America called it the Elk, the real American Elk being the Moose. These eye teeth are sometimes found afterwards, dug up by the natives, and are looked upon by them as being miraculous.

Mr. STORER BENNETT: The creature is also very peculiar, in having the horn not growing from the bones of the skull as it usually does, but it has a long horny projection having a mass of true bone from which the horn springs.

The PRESIDENT: Mr. F. J. Bennett undertook at our last meeting to examine microscopically Mr. Maggs' specimen in conjunction with Mr. Ackery. Perhaps he has something to say.

Mr. F. J. BENNETT said, that in conjunction with Mr. Ackery

and Mr. Maggs, he had examined transverse sections of the tooth in question, and found the thickened semicircular column of dentine appearing in the pulp cavity to be due not to secondary calcification, but rather to an induplication of the normal structures of the fang ; so that both dentine and cementum became reflected inwards, the latter much thickened and occupied by lacunæ. These appearances were clearly to be seen in the specimen under the microscope.

Mr. C. S. TOMES, in bringing forward his casual communication, said : " The case which I wish to mention is one in which epithelioma occurred in the socket of a second upper molar. It had one of its roots virtually, if not entirely, separate from the others, the palatine root being quite apart from the labial roots. Screws had been put into these and a ring put round the tooth, and a large amalgam filling contoured upon it. The tooth had remained comfortable for about eighteen months from the time it was filled. When the patient showed it to me he did so as being rather loose. I noticed that there were some rather ugly granulations round the neck of the tooth, and took it out. I then found that the whole of the socket was occupied with granulations of epitheliomatous aspect. I took the patient to my next-door neighbour, Mr. Christopher Heath, and he said that he had not the least doubt but that it was a case of epithelioma. He suggested that an attempt should be made to destroy it with chloride of zinc paste. It was accordingly covered over by a vulcanite plate, and the paste kept in for 24 hours. That brought away some sloughs, but the raw surface was never without the appearance of epithelioma. A second attempt at destruction with the paste was made unsuccessfully, and it was then decided that some operative interference should be undertaken. The patient was also seen by Sir James Paget. Mr. Christopher Heath being ill, the patient was taken to another surgeon who was also of opinion that it was a case of epithelioma, but was averse to any operation. There was a little hardening and thickening which extended from the mucous membrane on the cheek, and the tuberosity of the maxilla was thoroughly involved. One surgeon having advised against operation, although everyone else was in favour of it, made the patient undecided, and a delay of two or three months took place before he ultimately made up his mind to undergo the operation, which was then performed by Sir Joseph Lister, who exposed the part fully by an incision from the angle of the mouth nearly up to the ear. He chiselled away the bone, not resecting the entire maxilla,

but rather attacking the disease where he found it. The whole of the tuberosity was removed and a hole made into the antrum. Immediately after the operation, in looking into the patient's mouth, there was a good-sized cavity, as big as a very large walnut, that has speedily healed and contracted. I am sorry to say that I am unable to find the model which I must have somewhere, and unfortunately, the patient is abroad." Mr. Tomes then described the difficulties encountered in attempting to restore—by means of a denture—the part removed, and found that the best results were obtained by using a vulcanite plate with velum flaps, where necessary, which yielded to the movements of the neighbouring soft tissues.

The PRESIDENT : I am sure the Society will be much obliged to members who will discuss Mr. Tomes' communication. The disease appears to have been in the alveolus and not in the antrum. I had a case of cancer in the antrum happening when I was a surgeon at the West London Hospital. In that case the jaw on that side was removed. The patient, a child, died in the hospital.

Mr. HENRI WEISS : As Mr. Tomes' case bears so close a resemblance to one in which I have been interested for sometime, and which I have already brought before the Society, I would like to ask him whether there are any white patches existing about the mouth and cheek such as are present in my own case. These white patches peel off and appear to be due to irritation.

Mr. C. S. TOMES : There are no white patches, no ichthyosis about the mouth which is a typically healthy one. The epithelioma originated wholly in the alveolus and not in the antrum, which was opened into in going sufficiently wide of the disease.

The PRESIDENT : If no other member has any observations to make, I have a case of *hyperostosis* of which the following are the particulars:—A gentleman, a patient, aged 40, has been under my personal observation for about ten years, having during that period paid visits from time to time for ordinary dental operations. There is an abnormal appearance of the lower jaw, which I at first regarded as an exaggerated case of under-hanging jaw. The deformity consists in the great size of the bone and the undue length of the ramus, whereby the jaw is protruded. The enlargement is all but perfectly symmetrical. The patient states that so long as he can remember there has been this underhanging. It seems to me to be decidedly bigger than at first, although the patient has not noticed the increase in size, but seeing it daily, he would not be so good a judge as

one who saw it occasionally. At the patient's repeated and urgent request I have, after first refusing, provided him with artificial teeth to fill the gaps occurring in the mouth, although I have explained that they would probably be useless in consequence of his inability to bring the jaws together. I shall be glad of any suggestions as to the construction of an apparatus which may make mastication effectual.

Mr. JONATHAN HUTCHINSON, remarking upon the case mentioned by the President said, the evidence as to whether the jaw was increasing in size or not seemed to be a little doubtful. The jaw is somewhat tender, which suggests that it is increasing. I was specially interested in the case in connection with the new disease *Acromegaly*, in which all the bones of the hands, of the digits, and of the head increase. I have now a patient suffering from *Acromegaly*, whose lower jaw is very large, quite twice the natural size. Then, Sir, with reference to your case, I thought at first the patient's head *did* look large, but he says he has no tenderness of the skull bones. If he had, that would point to the possibility of its being *Acromegaly* in its incipient stage. In this disease, although the jaw is first affected, the skull and the digits enlarge later on. The question seems to me to be whether it is a case of congenital or of aggressive disease, if the latter, I think it is a case of *Acromegaly*, and that he will experience some increase in the size of the head and hands later on.

Mr. C. S. TOMES: There is just one point which throws a little light on the case, though not much; the patient told me that when a child, an attempt was made to correct the deformity by means of an inclined plane. I think that if the lower jaw had projected as much then as it does now, the most sanguine practitioner would hardly have entertained any hope of remedy by such means. Mr. Christopher Heath had rather a curious case in which the articulation was thrown out on one side. It was not symmetrical, and by incising the jaw the patient's articulation was restored.

Mr. JONATHAN HUTCHINSON, F.R.S., then read a paper on

DIAGNOSIS BY THE TEETH.

The subjects chiefly dealt with were:—(1) Amalgam Stoppings and their connection with sore mouth; (2) Syphilitic teeth; (3) Stomatitis; (4) Correlation of defects of the teeth with those of other organs of the body; (5) The significance of tooth structure as an index to that of the other tissues of the body; (6) Riggs' Disease; (7) Some examples of unusual perfection of the teeth in advanced life.

With reference to Riggs' disease, to which Mr. Hutchinson first referred, the chief interest in the subject to him was the endeavour to associate it with other constitutional conditions, and he thought that it was closely analogous to *sycosis* which is found affecting the hair follicles, and there was also an affection of the nails which he ventured to call "*Sycosis Unguium*." Pathologically, *sycosis* is a contagious inflammation, and is known occasionally to spread to different parts of the body. The important point, Mr. Hutchinson thought with reference to Riggs' disease, was to know how far it is a local, and how far a constitutional condition, and he asked information from members of the Society as to whether their experience was that it occurred in patients of very good health. He had seen it in persons who were in otherwise excellent health. As to the treatment of *Sycosis Tarsi*, it is often in the opinion of medical men associated with some lowering of the system, and tonics and cod liver oil are prescribed. Mr. Hutchinson did not favour that course; he regarded the disease as distinctly contagious, being communicated from one follicle to another, and he advocated pulling out the affected lashes and treating with mercury or lunar caustic. He mentioned, however, a case which illustrated the opposite side of the picture, in which the patient got well under tonics, especially with the help of champagne. He was of opinion that Riggs' disease is exactly analogous to *Sycosis Tarsi*, and being a firm believer in the doctrine of local contagion in the latter disease, he suggested that Riggs' disease might also be conveyed from one tooth socket to another. That being so, it followed that the treatment he would advocate would be to extract badly affected teeth, and arrest inflammation and dry up suppuration in others.

Prefacing his remarks with the observation that he felt it necessary to speak with great caution before the Odontological Society on that part of his subject, Mr. Hutchinson passed to the consideration of amalgam stoppings, and their occasional injurious effect upon the tongue and mouth. He had long entertained the opinion that some amalgams do cause sores on the tongue and mucous membrane of the lips, and he still very frequently saw sores in the mouth in circumstances which obliged him to believe that the stopping used for the teeth was the cause. This never occurred in connection with stopping with gold or gutta-percha; the material was always some black compound. So strongly had he been impressed with this fact, that where his patients were predisposed to

sore mouths, he always advised them not to have black stoppings. With reference to the composition of amalgams, he spoke only as an observer, knowing nothing of the details of their manufacture, but he suggested that possibly some of them might undergo some sort of solution in the mouth. However that might be, it was in his experience very usual to find black stopped teeth opposite to an intractable sore in the mouth and with the removal of the stopping the sore got well.

Referring to syphilitic teeth, Mr. Hutchinson had nothing new to say, but thought that a review of the present state of opinions on the subject might be profitable. He believed that it might now be said that the value of the notches on the upper incisors is fully recognized all over the world as indications of inherited syphilis, and as time had gone on he thought that they had learned to concentrate their attention on the upper central incisors as being the test teeth; other teeth were often more decidedly marked but were less reliable. Respecting the test teeth, an experience of thirty years enabled him to say that, where their malformation had been well characterized he did not think that in a single case he had been misled. With reference to numerous cases of inherited taint in which in spite of it the characteristic teeth—using the word characteristic in its strongest sense—were not present, the best opportunities for observing the range within which syphilitic malformations of the teeth might vary and occur, were those in which several members of the same family had suffered from inherited taint. The experience of recent years had confirmed, without in any way explaining, two items in clinical observation which he had made long ago. The first was, that those subjects of inherited taint who presented good examples of *interstitial keratitis* have almost invariably malformed teeth, and those who have malformed teeth scarcely ever escape *interstitial keratitis*. The second was, that those who are liable to suffer in after-life from phagedenic affections of the mouth or throat, very often, perhaps usually, show nothing peculiar in their teeth.

Turning to the subject of Stomatitis, Mr. Hutchinson was aware that propositions which he had made several years ago had not met with general acceptance. Those propositions were to the effect that in cases in which great and general damage to the enamel of the permanent set of teeth was observed, it should lead to the suspicion that the patient had in early infancy suffered from stomatitis attended with inflammation of the tooth sacs. Subsequent experience had

confirmed him in his opinion. A knowledge of this fact had led him latterly to be far more careful in the use of mercury in infancy. The test teeth for mercury were the first permanent molars. Of the concurrence of these teeth with lamellar cataract he had during the last few years some remarkable cases in proof. He still held to the belief that lamellar cataracts are due to convulsions in infancy and the damage to the enamel of the teeth to stomatitis caused by mercury given for the convulsions.

Of late years Mr. Hutchinson had used mercurial teeth as a guide to treatment in adult life, and wherever they were present he observed the greatest possible care in administering mercury.

The whole subject of the correlation of defects of the teeth with those of other organs, Mr. Hutchinson considered well worthy of more careful study than has hitherto been given to it, and in this connection he mentioned, among others, a very remarkable case which he published several years ago of a male child born almost hairless and with great defect in the development of the skin. His mammary glands were also absent. His eyes, and teeth (which were his first set), were only peculiar in being small and not placed straight. He had no microphthalmos. This case might be taken as a proof that extreme defects in the skin and its appendages are not necessarily attended by defects in the development of the teeth.

Dealing at some length with the subject of the significance of tooth structure as an index to the other tissues of the body, Mr. Hutchinson asked, if the teeth are well or badly formed, are we justified in coming to any conclusion as to the longevity of the body? It is not sufficient, obviously, to state some loss of the teeth, it is necessary to state *how* they are lost. Not only would he suggest that an endeavour should be made to learn all that could be learned as to the vital decay of the teeth, but careful observation should be made as to the tendency or otherwise to accumulate tartar; information on this point might prove useful. He was of opinion that it was not necessarily connected with or due to want of cleanliness, but was not infrequently associated with an excessive flow of the saliva.

Mr. Hutchinson concluded his paper by giving some examples of unusual perfection of the teeth in advanced life.

The PRESIDENT: It is impossible to pass over Mr. Hutchinson's valuable contribution to our *Transactions* and to scientific literature without specially thanking him. Notwithstanding his known dislike to compliments, I cannot forbear expressing, on behalf of the

Society, the feelings of admiration and regard which we, in common with the profession, entertain for him, remembering his work and how much he has contributed to the maintenance of the high standard of surgery. The only point in his paper with which I should be disposed to disagree with him is on erosion, for the tooth brush grooves he refers to are not necessarily caused by the tooth brush. The question of amalgam stoppings Mr. Hutchinson mentioned, as he says, many years ago, I then told him I could not form any rationale upon the subject, neither can I now. With reference to Riggs' disease, Mr. Hutchinson has thrown some real light upon a matter upon which our knowledge has been very imperfect. The remarks we have listened to will affect our treatment, which has hitherto been empirical, but which corroborates his statements. With regard to syphilitic teeth, I have seen a vast number of children with syphilitic history who had nothing wrong with their teeth. There are many other points that I should like to speak upon, but I will not stand between other speakers, more especially as my loss of voice prevents my speaking at any length.

Mr. CHARTERS WHITE had listened to the paper with much pleasure and interest, and thought the members would still further profit by reading it carefully at home. With regard to Riggs' disease, he had invariably found that it was associated with the falling off of the hair of the patient. He thought that the treatment of profuse application of antiseptics was wrong, and that the teeth implicated were generally dead and required removal.

Mr. C. S. TOMES : Mr. Hutchinson has given us such an amount of material from his wealth of observation that it seems to me difficult to know what particular point to take up ; there is such an affinity of points that it is difficult to make a selection. But there is one thing to which I should like to draw Mr. Hutchinson's attention, viz., an argument against the contagiousness of what we call Riggs' disease ; it is very common to find it attacks the mouth symmetrically. That, so far as it goes, would seem to point to what one vaguely calls constitutional causes. On the other hand, where you have one or two badly affected teeth, the best thing you can do is to take out the very bad ones and treat the others. And then, again, the measure of success which attended Dr. Riggs' treatment would point rather to their being some contagion. Dr. Riggs' treatment—which I think is very rarely carried out as he would carry it out—consisted in a very severe scraping of the alveolar margin, which put his patients to a great

deal of suffering. He would point out how very bad the cases were ; and certainly very great advantage resulted from this thorough scraping away of the margin of the alveolus, but there, I think, it ended. I have never known a case of Riggs' disease in my own experience successfully treated—never. I have known cases which have been supposed to have been successfully treated, but they always recurred ; that, however, is perhaps not wonderful, because without extraction of the teeth and treatment of the socket, the treatment could hardly be thorough.

MR. F. NEWLAND-PEDLEY : I think, Sir, that it would be very serious if Mr. Hutchinson's remarks on the subject of amalgams were to go forth to the profession without being called in question. I do not think that any general condemnation of amalgams would be warranted, nor do I think, speaking generally, that the effects referred to are due to the quality of amalgams. A great many old amalgam stoppings become sharp at the edges, and these are the cases where we have ulceration of the tongue. I should be inclined to agree with Mr. Hutchinson that Sullivan's Amalgam would be more likely to produce ulceration than any other, because it is very soft, and after a time a knife-like edge may be produced.

MR. STORER BENNETT : I think that Mr. Newland-Pedley's remarks are extremely valuable. I cordially agree with him that it should not go abroad in the *Transactions* of the Society that amalgam fillings *per se* are liable to produce ulceration. I do not wish for one moment to impugn Mr. Hutchinson's observations, but I am sure that he will admit that we, as dentists, see an enormous number more amalgam fillings that have been in a number of years, than could possibly fall to his lot, and I think it is the experience of dentists that amalgam fillings may remain many years without injurious results to the tongue or mouth. With reference to the subject of Riggs' disease, Mr. Hutchinson's observations with regard to the hair, points to the fact that the patients are not suffering from constitutional debility. But I think it is the experience of dentists, that those who are suffering from Riggs' disease, are generally run down, and there is constitutional depression in most of them. It may be interesting to members of the Society and to Mr. Hutchinson to know that a great many animals closely confined or imprisoned suffer from Riggs' disease ; in many cases where the history has been known, debility has been present. I think, therefore, in this disease, the constitutional condition is generally a lowered one.

Mr. MOORE related the case of a lady, aged thirty, who was in perfect general health, but had Riggs' disease so badly, that all her teeth—both upper and lower—were extracted, with the result of restoring the mouth to health.

Dr. G. CUNNINGHAM: I should like, Sir, to bring forward a photograph bearing upon the remarks made by Mr. Hutchinson, at the close of his paper. It shows the necessity, not only with regard to amalgam stoppings but in other cases also, of a joint inspection by the medical man and the dentist. Mr. Hutchinson referred to the teeth being worn down by the use of the pipe, stating that it might be an indication of the quality of tooth substance. I think as a rule it shows rather the quality of the pipe than of the tooth. I have observed that the worst cases of wearing of the teeth from pipe smoking has been produced by the common clay.

Mr. WALTER H. COFFIN: I only rise because I understood a most distinguished member of the society to commit himself to the incurability of Riggs' disease. I should like to say that I have known a number of cases of young patients—young men and young women from 25 to 30—cured. It is open to any one to say that as the conditions were cured it was not Riggs' disease, but all the characteristic appearances of the disease have been present. In cases of more advanced age, I have seen every symptom pass away but recur. I have had occasion to collect much of the writings that have been made, both in England and America on the subject, and I may assure Mr. Hutchinson that no constitutional treatment has been known to affect the disease, and that there is no evidence of a constitutional cause. In reference to Mr. Storer Bennett's remarks about depressed vitality existing in cases of Riggs' disease, the admitted innutrition of the parts affected has an interesting bearing upon constitutional causes. It is, perhaps, going beyond the mere question of pathology to speak of the treatment of Riggs' disease, but as I have spoken of what I consider to be cases of cure in young subjects, it would be unfair not to say that the treatment was entirely local, not merely mechanical—such as Dr. Riggs' treatment—nor entirely antiseptic because combined with caustics.

Mr. JONATHAN HUTCHINSON then replied. In speaking of the criticisms on Riggs' disease, he said: I should very much have liked to have more information on the point of constitutional proclivity, but there seems to be some difference of opinion. I understood one

speaker to say that in all cases the patients were feeble, but I repeat what I have said, that I have very often found it in otherwise healthy persons. I was under the impression that it was *generally* seen in persons in good health and middle age. I have seen patients who had lost all their teeth and who were presumably perfectly well. One speaker remarked about animals: but I have seen a case of a sheep-dog which has lost all its teeth; this was an animal not in confinement and in good health, in the circumstances we could only explain it on the theory of contagion. Mr. Tomes certainly hit a point when he referred to the symmetrical character of some attacks: there are symmetrical forms of skin disease in which exactly opposite parts are attacked, that is a peculiar proclivity. Contagion never produces sore mouth, it only produces alveolar suppuration. I should be very sorry, Sir, if I were to be understood to attack the use of amalgams generally, I did not intend anything of the sort. I am quite aware that a large number of amalgams are used to the great advantage of patients. All I wished to draw attention to was that there are cases where, from a peculiar condition of the saliva and the colour of the teeth, it must be inferred that it is the result of the chemical composition of the amalgams. I am well accustomed to examine teeth for mechanical defects and sometimes I have been quite unable to detect any. So strong is my belief that sore mouth is often produced by the teeth that I always look at the teeth where there is no history of syphilis. I am frequently sending my patients, who suffer from ulceration, to have their amalgam stoppings taken out, with good results in every case.

The usual votes of thanks having been passed, the next meeting was announced for May 6th, when a paper will be read on "Electrical Progress and Dental Practice."

The meeting then separated.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

AN ordinary monthly meeting of this Society was held on Friday, April 5th. Mr. HENRI WEISS, Vice-President, in the chair.

The meeting was made Special to consider an alteration in a Bye-law, for posting-up the Council's nomination of the new officers for the ensuing year a month before the usual time.

The new Bye-law to be called XVI.a, is as follows :—

" The Council shall at the meeting in December nominate the Officers for the ensuing year, such nominations being posted up in the hospital 21 days prior to the Annual General Meeting. Members of the Society shall have the power to substitute the names of any members willing to serve."

This was proposed and seconded by Messrs. GREETHAM and ALLNUTT, and carried unanimously.

Also to consider Mr. Haycroft's proposed alteration in the date of the May meeting, which was not acceded to.

The meeting then resumed its ordinary form.

The minutes of the previous meeting were read by the Hon. Secretary, Mr. ARNOLD PRAGER, and confirmed.

Miss Day was present as a visitor, and received the usual form of welcome from the President.

Casual Communications.—Mr. FISK mentioned a case of a hospital patient who had fallen down and received a sharp blow on one of the central teeth. The crown was found to be fractured, and came away in the forceps, bringing the pulp bodily with it. Mr. Fisk passed round the crown with pulp preserved in glycerine.

Mr. R. DENISON PEDLEY mentioned a case of necrosis of a lower temporary molar, with alveolar process, involving the cap of the bicuspid below.

He also brought a photograph of a woman showing substitution of the superior maxilla (by an artificial denture) after removal for sarcoma.

Mr. FARO presented a pamphlet to the Society on behalf of Mr. Fisher of Montreal.

Mr. RUSHTON mentioned a case, to know whether it was not an error in diagnosis, attributing a large fluctuating swelling to an accumulation of pus, whereas it yielded on incision a quantity of serum.

A discussion took place, in which Messrs. HUMBY, RUSHTON, PEDLEY, W. WEISS, FISK and the PRESIDENT took part.

Mr. R. DENISON PEDLEY then read an interesting paper on "Iodoform and its Uses in Dental Surgery."

A discussion on the paper was then opened by the PRESIDENT, in

which Messrs. HUMBY, H. G. READ, RUSHTON, ALLNUTT, &c., took part.

Mr. PEDLEY then replied, and a hearty vote of thanks was accorded him.

The meeting was then adjourned.

EXTRACTS.

THE EDUCATIONAL VALUE OF OUTDOOR GAMES.

PLAY affords perhaps as much opportunity for the development of some of the brain functions of the highest value in social life as the work of the class-room does for the mental function : and it is a hopeful sign to find a leading special journal like the *Educational Times* devoting a large amount of space to an article in which the value of play as a part of education is very ably discussed.

The play of the young child is but the spontaneous action of the brain centres when well nourished and left free ; the organised game is a means of co-ordinating this spontaneity which is the basis of intellectual action. In the older child play becomes something more than the expression of spontaneous action ; it may be said to be voluntary and purposive, as in the cricket-field, where the action of each boy is determined by that of others. All this kind of action is capital training for the perceptive faculties ; the passages for impressions from without to the brain are exercised ; the word of command from the captain, the sight of the flying ball are impressions quickly followed by rapid and accurate action. The period of waiting in the cricket-field is a lesson in attention ; the boy's own spontaneity is thus kept fully under control and co-ordinated with the action of others. The brain training thus given is not dissimilar to that required for mental action ; there is the accuracy of action controlled by the surroundings, the increasing quickness of reflex, the adaptation to circumstances, faculties all of which are so necessary in mental action.

Organised play produces a most useful effect. It trains the boy to do correctly just what he is told to do, and, while his spontaneous action is encouraged, he is kept ever ready to act according to circumstances. Play is healthful ; so is the alternation of mental work and active play. In mental action the brain centres probably act much in stimulating one another ; in play the muscles are stimulated by the brain centres, and the purely mental action is diminished.

Thus, play is not merely muscular exercise, but a change in the kind of brain action, and probably of the action of the special centres.

Even if the fact were not well established, the physiologist would expect to find that moderate athletics and success in mental work are not divorced from one another. This is well illustrated in the list of scholarships recently gained by the boys of St. Paul's School; all the athletic leaders are named in the list. The tendency to self-contemplation which is engendered by the modern system of competitive examination is to some extent counteracted by athletics. In the examination the individual wins, not his class; in the cricket club the eleven wins, though one individual may make a winning score. It is sometimes said that athletics make good bodies, to the neglect of mental culture. That may be so when too much time and attention are given to the river and the cricket-field; but it should be well understood that a highly organised game does exercise the brain as well as the muscles, though not in exactly the same way nor probably in the same parts as so-called intellectual training. A just balance between play and work may be struck for the individual, by noting what duration of mental exercise can be borne without the signs of fatigue following. Recreation of the athletic kind is most useful in turning "the brain overpressed with thoughts" to other modes of action, and preventing it from continuously acting in mental modes producing a cloud of uncontrolled thoughts, to be followed by troubled sleep and dreams. Habits of bodily activity are often the best cure for sickly states of mind.—*British Medical Journal*.

A PLEA FOR TUBE TEETH.

DURING a brief practice in the old country some years ago, I was forcibly struck with the many advantages of the English tube over the pin tooth, and the conviction remains with me, that even critics here who have never used them, and who therefore are apt to despise them, would probably change their opinion, as I did, could they see the service they render, and bring them into comparison and competition with their rivals. It is true that for facility of application, the pin teeth are superior, but having said that, I know nothing more to be said in their favour. It is complained that the tube teeth, which are only held on by sulphur, draw from the pin; but what about the American teeth? The pivots or pins of the very best often draw from the teeth. You can easily replace a tube

tooth which slips from the pin, or you can rivet it on the top and prevent it from slipping, but you cannot restore the tooth which has lost its pins.

One very great advantage of the the tube teeth—the pin being immediately in the centre of the tooth,—is that the strain is directly in the middle ; the masticating force comes plump in the centre, and is better distributed. In the pin teeth, this strain is uneven, and it is common, even in gold plates, to find the attachment of the lining broken from the plate. How frequently, too, does it occur with vulcanite. The whole strain on our bicuspid and molars, is outwards ; is not borne by the lower part of the lining, but by the small metal pins in the tooth. But the metal pivot of stiff gold on to which the tube tooth is placed, bears strain better, because it is next to impossible to bring pressure on it at any angle, except the tooth itself first breaks, and not often even then.

Another advantage is that to the tongue tube teeth are nearest to nature, and feel best. With ours, the tongue is constantly in contact with metal linings. Another advantage is that, with the exception of the specks of solder holding the pins in the plate, there is no quantity of solder likely to cause contractions in the arch. I was told by old British dentists who used tube teeth thirty years ago, that when the journals were discussing the warping of gold plates in this country, they were rarely troubled, owing, they thought, to the absence of a great quantity of solder. A gold plate with tube teeth always fits well if once made well ; but the best gold plate with teeth which have been lined and soldered, may be warped at any time it has to be repaired, and may be nearly ruined if a botch should repair it with common solder. No botch can spoil a gold plate with tube teeth, because he cannot adapt a new tooth to perfection.

I admit that for close bites, our teeth are better than tube teeth. They can be used too, better with vulcanite combinations. The cheapening of artificial work, not the improvement in it, has given the boom to the pin tooth, and yet among the latest improvements by several manufacturers, we find a modified form of the old tube teeth, with the holes through the sides, and intended for miserable vulcanite to run into, instead of for solid gold pins.

I am using almost exclusively the English tube tooth—with the interior platinum tube lining, when I can get them, in places where ordinary and even improved methods of pivoting are required. They

are as dense and as solid as flint, and I have yet to meet the first failure on any such account as that friability characteristic of our teeth. I should like to see you cut one of these teeth in two with a pair of scissors, as you can cut clean our gum blocks! You might as well try to take a bite out of a bit of steel.—*Dominion Dental Journal*.

DYNAMIC ELECTRICITY.

DYNAMIC electricity, by which is understood electric force generated by mechanical power as by a dynamo, in contradistinction to that generated by chemical decomposition, as in the various forms of batteries, is being utilized for the production of light, heat, and power in medical and dental offices, and it is not unreasonable to suppose is in some instances employed by persons having but faint conception of the laws governing the agent which seems such a tractable and useful servant.

The several forms of street currents are being introduced into offices without a proper understanding of the great difference in their character, and the corresponding liabilities in their use.

The unit of measure of electrical force (potential) is expressed by the term volt (as the pressure of steam in a boiler is designated by pounds). The unit of the measure of quantity (volume) is expressed by the term ampère. In the chemical batteries in common use, such as the plunge or bichromate battery, the cell power does not exceed $1\frac{7}{8}$ volts. If six such cells are employed there is six times that voltage, or say eleven volts. This voltage when compared to the street currents is insignificant. The Edison incandescent current is about 110 volts; the Thompson-Houston current is 2,500 volts; the Brush arc current is 3,000 volts.

Passing the alternating current, which is not applicable for motor purposes, the two currents in common use are known as the arc and the incandescent. These differ widely, the arc current being distinguished chiefly by its *force* (potential), the incandescent current by its *quantity* (volume).

The incandescent current, as run by different companies, is also by no means uniform, the current varying in different lines from 90 to 300 volts, although the higher grades are used only for street-lighting purposes, and are not run into private houses.

The difference between force (potential) and quantity (volume)

may be clearly apprehended from an illustration as to the effect of a given quantity of water upon an object according to the manner in which it is employed. One can readily imagine only a pleasurable effect from the gentle flow of a stream of water from a pipe one or two feet in diameter, whereas if the same quantity of water was driven in the same time through a nozzle of an inch in diameter the results would be disastrous. Precisely this difference exists between volume and force in the two currents under consideration. A volume current of low potential might safely pass through the human body, while a less quantity, if impelled by a high electro-motive force, would kill.

Professional men and all others employing electric street currents should understand these points of difference and the special liabilities of the different currents, varying according to the degree of resistance offered, from an unpleasant sensation to an instant, lightning-like destruction.—*Cosmos*.

FOUR CASES OF FRACTURED INFERIOR MAXILLA: TREATMENT

By F. NEWLAND-PEDLEY, F.R.C.S., L.D.S.

(Dental Surgeon, Guy's Hospital.)

A CONSIDERABLE number of patients suffering from this injury seek treatment annually at Guy's Hospital, and three of the cases I purpose recording were incomplete a month ago. Each of the four illustrates a whole class of fractures, and all of them required mechanical contrivances applied within the mouth.

Case I.—A middle-aged man received a kick from a horse, and presented himself with a lower jaw that was literally collapsed by three fractures, one vertically on each side of the mouth in the region of the canine tooth; and a third running transversely above the chin, separating the lower front teeth with their sockets from the base of the bone. The sides of the jaw fell inwards, and it required moderate digital pressure to bring the lateral segments into position, though the central piece was quite loose. This was a typical case for the Hammond wire splint, for the parts could be brought into correct position by means of moderate pressure, and there were firmly implanted teeth in each fragment. Plaster-of-paris models were taken of both jaws, and a true model of the lower jaw with deformity corrected was obtained by sawing through the plaster along the lines of fracture, and rearticulating the

fragments with the cast of the upper teeth. A loop of steel wire was made to pass round all the teeth of the lower jaw along the gum margin, and was affixed to the fragments in corrected position by fine binding wires in the usual way. The splint was removed in seven weeks, the parts being restored to normal position. Lately I have used piano-wire and fine knitting needles for making the frame; the steel possesses greater strength, and diminished bulk as compared with iron. Gold solder should be used.

Case II. was a boy aged 8, with a fracture by the side of the canine tooth on the right side. He had been run over, and his face and head were very much swollen and injured. The posterior fragment was much raised, and required considerable pressure to reduce the displacement. The only teeth erupted were the first permanent molars and the central and lateral incisors, and these were very short. The temporary molars were carious and the condition of the mouth generally was not favourable to Hammond's splint. Models were taken, and the deformity was corrected on the plaster cast. A Gunning's splint was applied, consisting of a vulcanite plate covering the palate, teeth, and gums of the upper jaw and united by vulcanite pillars to a similar plate covering the teeth and gums of the lower jaw. The separation of the jaws allows spaces to be left between the columns of vulcanite for speech and the passage of food and saliva. For more than a week this splint did little good beyond limiting the movement of the fragments, for the displacement recurred as often as it was corrected, and the boy's face was so swathed in surgical dressings it was out of the question to apply pressure by a chin bandage. Gradually the fragments settled down into their position in the splint and, with the rapid union common in childhood, the case was complete in five weeks.

Case III. was a young married woman admitted into the wards of Guy's Hospital with necrosis of the lower jaw. Nearly the whole depth of the horizontal ramus from the median line to the angle was removed as a sequestrum. A few days afterwards the arch of the jaw yielded and collapsed, the sound side deviating towards the affected side and constituting a remarkable deformity due to "spontaneous" fracture. At the request of a surgical colleague, I constructed a form of Gunning's splint. A vulcanite appliance was made to cover the whole available surface of the upper jaw and gums, and to the lower surface of this there was attached a vulcanite cap that fitted over the teeth and gums of the lower jaw on the sound

side only. The splint was inserted under chloroform, and the space left free on the affected side gave ample room for the introduction of food. This appliance was worn continuously for five months, at the end of which time the power to depress the lower jaw was obviously restored, with absence of pain. On the removal of the splint the teeth of the upper and lower jaw were in their correct relation to one another, and the maxillary arch was again firm.

Case IV. was a patient in private practice. On her wedding trip to London she was knocked down and run over by a trap, in which two men were seated. The wheel passed over her, and she was so injured it was thought she was dead. She consulted lady doctors, especially about deformity of her face, but was assured there was no maxillary fracture. A fortnight elapsed and she returned home to the West of England, where she saw her family doctor, who advised her to consult a local dental surgeon. This she did, and at his instance she returned to London, three weeks after the accident, to be placed under my care. The face showed separation of the upper and lower front teeth to the extent of about three-fourths of an inch, and the lower jaw receded greatly. The mouth could be opened, and there was no deviation of median line. Examination of the oral cavity revealed no fracture through the dental arches. Pressure over both condyles produced pain and some slight crepitus, more marked on the right side. The appearances were in favour of dislocation, but there was no hollow behind the condyles. I obtained the aid of Mr. Davies-Colley, and under chloroform a thorough examination was made, revealing fracture through the neck of both condyles. The deformity was reduced, and a chin bandage was applied in the hope of holding the jaw in place till a splint could be made; but directly the patient began to come to the deformity began to recur, and very soon it was necessary to cut the bandage to relieve the pain. In consultation with Mr. Davies-Colley I made a full-size Gunning splint, with deep vulcanite rims, taking its fixed point from the upper jaw, and thus holding the inferior maxilla forward. The models were taken under chloroform, and the splint inserted under ether. A perfect position of the fragments could be obtained under the anæsthetic, but partial relapse took place when the patient came to, in spite of the deep rims of the splint and firm pressure applied by a special chin bandage. The latter was made of strips of webbing united by buckles. The obliquity of fracture and

the muscular action were such as to defy our efforts to bring the fragments of the jaw into their correct position in the splint by any pressure that the patient could readily bear. Increased pressure at once produced pain, swelling of the lower lip, and ulceration of the mucuous membrane in contact with the splint. By degrees the lower jaw settled down into an improved position, and the patient was prepared for some slight separation of the front teeth at first. In five weeks the splint was removed under ether, and it was found that good union had taken place on both sides. The cusps of the molar teeth impinged on one another, and when these were smoothed off the separation of the upper and lower front teeth was an eighth of an inch, and this has gradually disappeared. The other injuries from which the patient was suffering were injury to ribs (fracture) and fracture of neck of scapula.—*British Medical Journal*.

EXTRAORDINARY ACTION AGAINST DENTISTS.

Phillips v. Cottam & Sons.—This was an action brought by Harriet Jane Phillips, a single woman, living in Park Avenue, Oswestry, against Messrs. Cottam & Sons, dentists, practising in Oswestry, to recover damages for alleged negligence and unskilfulness in the extraction of one of the plaintiff's teeth.—Mr. Bott appeared for the plaintiff, and Mr. Malcolm Douglas for the defendants.—The case was heard before a jury.—The plaintiff's claim of £25 was made up as follows:—Doctor's bill, £3 8s. 6d.; total loss of time and salary, and board and lodgings, from November 13th, 1888, to January 15th, 1889, partial loss of time from the latter date until the action was brought, extra nursing, nourishment, and other expenses occasioned by the loss of blood, £21 11s. 6d.—The plaintiff alleged negligence and unskilfulness by the defendant in fracturing her jaw and tearing her gums, in causing and allowing her to bleed, and doing nothing to prevent or stop the bleeding or cure the fracture, and in taking up the gums with the forceps, and not properly and skilfully preparing the gums previous to the extraction of the tooth. In opening the case, Mr. Bott said they alleged that the younger member of the firm, in extracting the tooth in question, instead of lancing and preparing the gum by pressing it down, took up in the forceps both the gum and the tooth, and in taking out the tooth tore the flesh of the gum both inside and outside, leaving a bleeding surface, and taking no pains to prevent the loss of blood. They

alleged the loss of blood which had caused the plaintiff's illness was occasioned by the manner in which the tooth was extracted, and his client asked for damages commensurate with the injuries she had sustained. She was formerly in receipt of a regular salary, as a dress and mantle maker, of £45 per annum, with a further allowance of £5 a year for apartments. She lost this for two months, and had now lost her situation altogether in consequence of her illness.—The plaintiff, in her evidence, said that on November 13th, she went to Messrs. Cottam and Sons to have a tooth extracted. The tooth was taken out by Mr. Cottam, jun., who did not lance the gum, but took hold of part of it with the instrument. The gum was torn, and bled very much. She called Mr. Cottam's attention to it, and he said it would come right by and bye. He did nothing to heal the gum nor to stop the bleeding. She returned to her work at Glasgow House, but felt very ill later in the day, and going home, sent for Dr. Ward, who stopped the bleeding. She believed she lost a lot of blood, and was very weak. She did not work again until January. She was manageress of the dress and mantle department, and had lost her situation in consequence. She had previously had four teeth taken out at the same time, and her gums did not bleed then.—In cross-examination she said that both were pulled out with great force. She made no complaint to Mr. Cottam until February 11th, and on the 12th Dr. Cartwright examined her. At the time she left the surgery blood was running freely, and no effort was made to stop it. Dr. Ward bandaged her jaw on November 14th, and prior to this he had put cotton wool in her jaw. She did not go to complain to Mr. Cottam because she thought it best to put the matter in the hands of a solicitor.—Dr. R. H. Ward, assistant to Dr. Lewis, said he was called to see Miss Phillips on November 13th. He looked into her mouth, and his first impression was that it was the ordinary bleeding from the tooth cavity, but afterwards he found that this was not so, as it came from the gums on either side of the place where the tooth had been. His opinion was that, in taking out the tooth, the edges of the gum had been torn away. The bleeding was not entirely stopped until the night after the tooth was drawn. Miss Phillips lost a great quantity of blood, and he attended her for a considerable time. She had been incapacitated from work for about two months. Cross-examined: He noticed nothing beyond the tearing of the gum. He had never suggested that the jaw bone was fractured.—Mrs. Warmingham, living in Park Avenue, said that in November last

plaintiff lodged with her. After the extraction of the tooth, the plaintiff did not leave the house until December 23rd. She was very feeble, and was supplied with nourishments, besides what were usual. His Honour said he supposed the plaintiff would call scientific witnesses? Mr. Bott said he did not intend to do so, and submitted that no gentleman who had not seen the girl at the time could give evidence of any value.—His Honour said a dentist could say after hearing Dr. Ward's evidence, whether the operation showed want of skill.—Mr. Bott said that another part of his case was that no effort was made to stop the bleeding.—His Honour: But she never went back to Cottam's.—Mr. Bott: Possibly she had then lost confidence in Mr. Cottam, and preferred having a doctor.—His Honour: I cannot help that.—Mr. Douglas submitted that there was no evidence of negligence to go to the jury. No evidence had been called to show that a similar condition of things might have arisen if the most skilful operation had been performed. He had abundance of evidence, dentists, from Chester, Liverpool, and Shrewsbury, who were prepared to say, after the evidence they had heard, that the extraction was a skilful one.—His Honour said he was clearly of opinion that there was no case whatever to go to the jury. It was the plaintiff's fault entirely in not going to the dentist who drew out the tooth immediately after she found the bleeding going on. Any respectable dentist, if he had been sent for, would have gone and seen the patient if she was too ill to go out. No dentist whatever had been called to show that there was any want of skill, and he thought it would be very unfair to call upon the defendants for any defence whatever. There was no case for the jury to decide, and he must direct a non-suit.—Mr. Douglas said that from November 13th to February 12th, they had had no notice of such an action, and as it had been difficult to get up the defence, he applied for counsel's fee.—His Honour granted the application.—*Shropshire Guardian*.

SIMPLE METHOD OF MAKING CASTS IN PLASTER OF PARIS.

By FRANK L. R. TETAMORE, M.D.

PATHOLOGICAL specimens can not always be preserved to show to an advantage, nor is it convenient to remove them from the preserving fluid. I will try to demonstrate a simple method by which a plaster cast can be made accurate, and with very little skill to be required.

1st. Soft preparation of any kind, as anatomical dissections, frozen sections, dissections of the brain without being hardened; the viscera or any organ *in situ*, tumors, deformities or any pathological condition, where the patient can bear the heat of the paraffine.

Soft preparations, or in fact preparations of any kind, should not be put in any fluid to harden before casting. All objects for reproducing in plaster must be free from all excessive tissue, fat, &c., and nicely dissected, all surface moisture absorbed with blotting paper or a towel; all soft projecting parts to be suspended to a light framework of some kind with threads.

If a preparation of a pathological specimen is the object, after it is all prepared as above, lay it on a smooth surface—a large plate, or plate of glass is better. Arrange to show every part—under cuts will not prevent in any way a perfect cast. With a soft camel hair brush, paint a very thin coat of oil over the preparation evenly, leaving no excess of the oil.

To make a cast of any part of the living body, apply a strong solution of cocaine when there is an exposed surface. In some cases it may be necessary to give an anæsthetic when the skin is not removed in any way; a $\frac{1}{20}$ solution of carbolic acid applied to the part two or three times will act as a local anæsthetic. Apply a thin coat of oil, applying the brush in the direction of the hairs; when there is much hair, apply a thin solution of soap.

2nd. To make a mould, melt paraffine in a water bath. The heat required will be above 130° F. Use a soft camel hair brush about 1 inch wide; dip the brush in the melted paraffine and apply quickly to the object, only touching the tip end of the brush, and with one stroke apply the melted paraffine in this way to every part, and continue until enough paraffine covers the part to make $\frac{1}{4}$ -inch in thickness.

Great care must be taken in applying the first coat, as the paraffine will harden so quickly that the brush will draw the preparation out of place.

The mould may be cooled with cold water, and when hard the preparation can be readily removed. The mould must be washed clean at once with cold water, when it will be ready to be filled with plaster.

3rd. Procure fine dental plaster of Paris, which must be free from any pieces of wood or paper. It is better to sift through a fine sieve. The mould should not be oiled. If the cast is large, mix only enough

plaster at first to cover the surface of the mould about $\frac{1}{4}$ -inch thick. If small, enough may be prepared to finish running the cast. Select a suitable vessel of earthenware and put in a sufficient quantity of water. Stir in the plaster gradually until it is of the consistency of cream, pour into the mould, and handle it so that all the surface is covered. Then pour out the liquid plaster, pour in and out until the plaster sets. If it is a large surface, paint the plaster over with a soft brush, washing out the brush before the plaster sets.

When enough plaster has covered the surface and sets to a thickness of about $\frac{1}{2}$ -inch, with large casts one inch—make a bed of plaster on a plate of glass, turning the mould on this, which will form a smooth surface for the under side of the base. A little sulphate of potash added to the water, 1 dram to the pint, will make the plaster harden quickly.

4th. When the plaster is hard, after waiting about one hour, immerse the whole in a vessel containing boiling water, which will melt all the paraffine, leaving the cast free. Pour boiling water over the cast after it is removed from the vessel, which will leave the cast white and clean. The paraffine may be used any number of times. It can be readily removed from the vessel when cold.

The cast should be turned up, and set away to harden and to evaporate the moisture, which will require about a week or ten days if kept in a warm place. It can be coated over with white shellac varnish and colored with oil colors.—*Brooklyn Medical Journal*.

THE NERVOUS PATIENT.

By J. R. CALLAHAN, D.D.S., HILLSBORO, O.

Read before the Mississippi Valley Dental Society, Cincinnati, March, 1889.

WHO of the dental profession does not dread to come in contact with the nervous patient? or perhaps we might say, the patient of hyper-nervous temperament, who, by his hysterical conduct in the chair seems to sap the operator of all the vitality he ever possessed and make him feel as if palsied old age had come upon him, and finally when the patient is gone, exclaim, "I'm glad that patient is gone: I really declare the patience of Job would yield at the chair." Be the patient a lady, she will, perhaps, begin by telling you how she dreads the awful boring machine, the horrid rubber dam, etc., etc. She will get into your chair with wailings and moanings; the moment you begin to operate she will begin to jump, perhaps grab

your hands, declaring she cannot possibly permit you to proceed. If the nervous patient be a big strong man, he will get into the chair with many misgivings and after one or two futile efforts to stand the operation conclude you had better pull the — tooth out.

This pain and dread and nervousness is a reality with most of our patients, especially so to those of nervous temperament, and I am of the opinion that most of the fault lies with the dentist. Hundreds of people are needlessly tortured every day by the dentists of the land. This is all wrong; there is no necessity of intense suffering in the dental chair. The dentist inflicts needless punishment generally, for one of three reasons, viz., parsimoniousness, carelessness or ignorance. Parsimonious in that he will insist on using dull and worn out instruments, is too stingy to subscribe for journals that he may keep posted and keep his mind active in most modern theories and practices of his profession. Careless in regard to condition of instruments; careless as to amount of pain inflicted; careless as to reputation; seemingly unmindful of everything only to get through, and get the fee. Ignorant either from lack of appliance or lack of ability to learn of, and apply the many agents and methods of lessening pain in dental operations.

Local pain obtundents are offered without number, a few good, but a large majority of them worse than useless; especially useless are the patent obtundents.

It has been stated that by thoroughly drying cavities with alcohol and warm air and excavating with sharp instruments, all that is necessary, for the obtunding of sensitive dentine and allaying accompanying nervousness, has been done.

This has not been my experience; while thoroughly drying cavities and using sharp instruments will go a great way toward comfortable operations, yet, there are many cavities on which this method seems to have but little of the desired effect.

Dr. F. H. Brimmer in the *Independent Practitioner*, Vol. 8, page 301, advocates a very unique pain obtunder. He claims to be able to obtund the tooth pulp by vibrations caused by a rapidly revolving instrument. He cut off the crown of a central incisor containing living pulp in the following manner: "A large spear-shaped drill was held in light contact with the centre of the tooth at the gum line, and revolved rapidly for fifteen or twenty seconds, the contact being only sufficient to transmit vibrations. The drill was then pressed against the tooth with a little more force, and the sensibility being

diminished, it was allowed to penetrate perhaps one-third the distance to the pulp, when it was again used as at first. At the third trial the drill entered the pulp; with a probe carbolic acid crystals were gradually forced to the end of the root; in twenty-three minutes the tooth was cut off and properly shaped for the crown, which was set on the following day. The whole was accomplished almost without pain." He goes on to give the following theory in regard to the operation. He says: "There is a limit to nerve conductivity. If a nerve be continuously irritated, after a time it loses its power of transmission until time has been given for it to recover its normal condition. The continual passing of the drill exhausts the irritability of the nerve, and it no longer conveys sensation until it has had time to recover its tone." I have not as yet tried this, to me, novel obtundent, but from what I know of Dr. B. he means just what he says; and I think the method worth a trial.

Local obtundents proving themselves so very unsatisfactory, many practitioners are administering chloroform for dental operations. This is a practice that cannot be too strongly condemned. Many dentists administer this very dangerous drug while excavating sensitive teeth; they will tell you that they only carry the patient to the first stage, thereby avoiding danger. This, as I understand authorities on chloroform, is perhaps the most dangerous stage for dental operations. It is stated in various places by authorities that especial danger depends on the well-known fact that any operation which involves irritation to the sensory terminations of the fifth pair of nerves, excites the inhibitory action of the pneumogastric nerves (through their sympathetic connections), which causes slowing of the heart's action and may terminate in fatal syncope. In the light of these and many other facts that might be mentioned, would it not be proper to say that the use of chloroform in dental operations is criminal practice?

In the *Dental Cosmos*, vol. xxvii., p. 12, Dr. W. H. Dwinelle, of New York, gives a very interesting experience in the use of morphine and atropine, for the purpose of quieting very nervous patients; he used the morphine for its anodyne qualities, and the atropine for the purpose of overcoming the objectionable qualities of the morphine, and for the further purpose of checking the flow of the saliva. His manner of introducing it into the system is as follows:—Start with one-sixtieth grain of atropine combined with one eighth grain of morphine—dose repeated in an hour; increase dose of morphine

if found necessary. Dr. Dwinelle, and many other prominent dentists, report very satisfactory results from this treatment. I would advise all who have not already done so, to read carefully this article referred to. This treatment, like any other, should be given careful attention before adopting or using it at all. I had a very agreeable experience within the short time I used it. I abandoned the practice on account of the time it consumed. In casting about for means to effectually and safely quiet the disagreeable nervousness of many patients, without taking up so much time, I began to try nitrous oxide gas. After having used it more or less for about four years, I have adopted the following method:—After having opened cavity with chisel, get instruments I wish to use all ready, dry cavity with an absorbent, administer from three to six inhalations of gas; this, as you know, is a very small dose, or almost no dose at all, yet it is sufficient to have a very quieting and delightful effect upon the nervous system. The patient does not lose consciousness, but seems to lose that nervous dread or apprehension so often described by saying that the tooth felt as if the instrument was going clear through to the pulp. When asked if they felt any pain, the patient will usually say no; or perhaps it may be as a lady said to me a few days since, when I inquired if she felt any pain, she replied, "Yes, a little, but I felt so calm and restful that I did not mind it in the least."

The gas should not be given in sufficient quantities to produce anæsthesia, but simply enter the first stage, called by Professor Guilford, the exhilarating symptom. Two administrations as described will enable the operator to prepare the sensitive portion of an ordinary cavity. Many people refuse to take it, being afraid of the gas. I never insist on it except in the case of very nervous persons. If there be any danger in the use of nitrous oxide gas as here proposed, I have been unable to find either from the history of the anæsthetic or from practice; if there is any let us hope it may be made apparent in the discussion of the demerits of this rather disconnected and incomplete paper.

THE CAREFUL FINISHING OF AMALGAM FILLINGS.

By GEORGE F. CHENEY, D.D.S., St. Johnsbury, Vt.

IN the January number of the *Archives of Dentistry*, Dr. Harrison, of Cadiz, Ohio, reports a case of a molar tooth extracted by him, that

had been filled on its posterior surface with amalgam, where the amalgam had been forced up over the cervical wall, between it and the wisdom tooth.

This filling became such an irritant to the surrounding tissues that absorption advanced rapidly ; and when operated upon by him, the wisdom tooth was destroyed, all the process gone, and a portion of the palate bone considerably absorbed, as well as much injury done to the adjacent first molar.

This case, of course, was mere carelessness, and calls to mind a similar case in my own practice, although not so extensive.

A lady came in asking for an examination of a tooth that was troubling her. Examination revealed pus oozing from between an upper first and second molar, and by probing, it was found that a mass of amalgam had been crowded between the teeth which was very difficult to remove, and upon removal proved to be nearly as large as the half of a silver three cent piece. I cannot account for room for so much to be crowded up there unless a pocket had been previously formed by food, the teeth being quite close.

It is time that some of these cases should be brought up to warn us against such unpardonable carelessness. In nearly every mouth we examine, containing amalgam fillings, we see evidences of carelessness in finishing ; the gum instead of being healthy is of a bluish color and bleeds upon the slightest touch, and upon examination we very often find the filling overlapping the cervical edge a thirty-second of an inch and sometimes more. The filling itself, in such cases, is enough of an irritant to keep the gum constantly inflamed ; it also leaves a shoulder upon which filth is accumulated.

Too much care cannot be given the finishing of amalgam fillings. I have for the past year or so adjusted the rubber-dam for most approximal fillings of amalgam, and I find enough better results can be obtained to justify the extra labor.

In most cases the dam can be adjusted without ligatures, by cutting small holes and soaping the rubber on the under side and putting over four or five teeth ; this makes the adjustment of the dam comparatively easy.

I work the amalgam into the cavity with bibulous paper, following Dr. Bonwill's instructions ; then finish with burnishers as much as possible, and with a piece of floss silk go up between the teeth, forcing the surplus amalgam up against the dam. Clear this surplus out as much as possible, and taking off the dam will remove the

remainder. I then dismiss the patient with a request for another sitting. I finish such fillings with sand-paper discs and strips.

When I cannot make this second engagement, I find by the use of floss silk between the teeth, these fillings can be very nicely finished without leaving an overlapping mass at the cervical edge or between the teeth.

I have also found a nicely adjusted matrix of very great service and almost indispensable in some cases.

I am convinced that many of the so-called cases of pyalism are caused by carelessness of the operator and not by the amalgam.

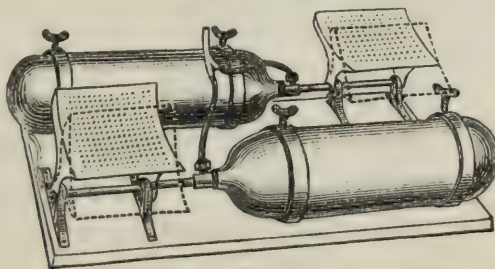
Furthermore, I am satisfied that a carefully inserted and highly finished amalgam filling will preserve teeth as well, and cause as little inflammation of the surrounding tissues, as any other.—*The Ohio Journal of Dental Science.*

NEW INVENTIONS, APPLIANCES AND REMEDIES.

We invite *all manufacturers* to send us anything useful and novel, which we shall be pleased to report upon.

VINCENT'S NEW GAS APPARATUS.

THE novelty of this appliance consists in a twin union so arranged that the tap of either gas bottle may be controlled by a pedal key rocking in a vertical direction. The usual method of a rotating foot-key is not without its disadvantages, and unless the valve be accurately adjusted the amount of twisting necessary is apt



to embarrass the anæsthetist. It is claimed for Vincent's apparatus that the valves are perfectly under control, and if this be so, the new arrangement is likely to prove valuable. The subjoined *illustration* explains minor points of detail. The apparatus may be seen at the Dental Manufacturing Company's Depôt.

THE DENTAL RECORD, LONDON: MAY 1, 1889.

ARE AMALGAM STOPPINGS INJURIOUS?

THE prejudice against amalgams as a material for filling carious cavities in teeth has scarcely survived that long experience which has proved their usefulness in a very large class of cases. Years ago we heard a deal about the wickedness of using anything but gold, and all sorts of disastrous consequences were predicted—which, however, never came to pass. The old antagonism has received an advocate from a quarter where it might have been least suspected. At the last meeting of the Odontological Society, Mr. Jonathan Hutchinson, in the course of some very interesting and instructive remarks on "Surgical Diagnosis by the Teeth," gave it as his opinion that occasionally he had found amalgams producing intractable sores of the mucous membrane of the mouth, and suggested that there might be some sort of solution of the materials which was concerned in the direct production of the lesions. Mr. Hutchinson has gained such a high reputation as a careful and scientific observer, that his opinions must at all times be received with deference; but we think that his observations on the particular point noted are not altogether free from misconception.

The great objection urged in days gone by against amalgam was the possibility of absorption into the system of the mercury contained in the stopping. This has been refuted both on scientific grounds, and by the practical results of millions of fillings inserted into the teeth of patients under all possible conditions, and was not even hinted at by Mr. Hutchinson. The point raised, however, was that the material itself acted as a local irritant, and that this might be due to some sort of solution, modified by the quality of the materials employed. We feel sure that the experience of almost every dentist will serve to negative the

suggestion thrown out. The only form of amalgam which suffers loss of bulk from any cause, apart from the mechanical one of attrition, is that known as Sullivan's, composed entirely of precipitated copper and mercury, and in this material we have distinct wasting probably due to oxidation in positions where attrition cannot possibly play a part. But we have never seen a single case where even a copper amalgam has occasioned any local irritation. The ordinary amalgams composed of silver, tin, copper, gold, zinc or other metals certainly undergo no process of solution, and may be observed intact as to bulk after twenty or thirty years of service.

That ulcers occur in mouths which contain amalgam stoppings goes of course without saying, but their cause—as was pointed out in the discussion of Mr. Hutchinson's paper—is nearly always due to the mechanical irritation of a sharp edge either of tooth or stopping, whilst it is far from uncommon to find ulceration in the mouths of persons of advanced life, due to sharp edges of teeth well worn by mastication, where no amalgam fillings exist.

The value of amalgam as a preservative of decayed teeth is incalculable—especially in the case of those who cannot afford elaborate gold fillings—and we should be sorry to think that Mr. Hutchinson's remarks might in any way detract from that usefulness. Indeed, we feel convinced that further observation will disprove the suggestion, and that amalgam—until some better substitute be found—will still enjoy the firm position which it holds in the confidence of dental practitioners.

Registration. The importance of dental registration becomes enhanced as time goes on and we experience the benefits of the Dentists' Act. By a provision of one of the sections of that Act, letters of enquiry are being sent to those registered, asking whether they have ceased to practise or have changed their residence. The value of this information in securing accuracy of the Dental Register must be patent to all, and we trust that those of our readers who have received notices will fill them in and return to the Registrar

without delay. If no reply is received *within three months* after sending a second notice the name of the offender may be *struck off the register*. This would of course cause considerable inconvenience—to put it very mildly; but apart from that we have a duty which we owe to the profession in its corporate capacity, and no one will deny that the value of a correct register is of the first importance to our existence as a legal body. We believe that there still exist some licentiates of dental surgery who either carelessly or wantonly have refrained from registering. This is an injustice both to themselves and to others. We have faithful workers who use all their energy in keeping together the interests of the profession for the common good, and when we are asked—nay implored—by them to assist in the good work by the very simple task of registering, we cannot surely deny them this small request. In parliamentary elections we are told to *poll early*; to all our readers we would say *register early*.

REVIEW.

A TEXT-BOOK OF OPERATIVE DENTISTRY. By THOMAS FILLEBROWN, M.D., D.M.D. Philadelphia: P. Blakiston, Son & Co. 1889.

THE opening words of the preface are as follows:—"For many years the author has felt that there was need of a text-book on Operative Dentistry, that should be confined more especially to the descriptions of the manual operations required for the preservation of the natural teeth." That the author has succeeded in supplying that need is more than questionable. Honesty compels us to say at once that the work is exceptionally weak—to use a very mild phrase—both in conception and arrangement, whilst there are several instances of glaring inaccuracy. That a book—and a *text-book* too—on Operative Dentistry should be occupied by 115 (out of a total of 256) pages dealing with Crown and Bridge work, is surely a fatal error; and when it is further acknowledged that these 115 pages are "necessarily largely a compilation," one can scarcely imagine how the author could draw upon the accumulated wisdom of the large number of coadjutors mentioned in the preface.

Dr. Fillebrown would have done well to have stuck to this text, and especially to have avoided pathology. Some of his dicta on the latter subject would be amusing, were it not for the danger of younger students becoming imbued with their supposed accuracy. Out of many instances we would note the remarks on "Erosion"

(which is described as "Abrasion"), the description of "Diseases of the Pulp," and "Riggs' Disease" (called *phagedenic pericementitis*!) which the author says "usually begins on a single surface of the *tooth*, or upon a *small spot* only." This must be a new disease discovered at Harvard, which we should much like to see.

As specimens of some of the operations recommended we give the following without comment. "To fill a canal with *an open foramen* (the italics are our own), prepare a cylinder of gold or gutta-percha, with square end the size of the canal, which has been previously enlarged nearly to the apex, and press or *mallet* gently to place, as before described, using as large a plugger as will pass up the canal."

"To extract the left upper bicuspid and molars, the operator should stand at the right and a little in front of the patient. Place the *little finger* and ulnar side of the *left hand across the forehead*; with the *forefinger* in the *mouth* distend the *cheek*, and with the *thumb* depress the *lower lip*. This will expose the teeth fully to view. Apply the forceps and extract as directed."

That there is still scope for good work in the field of dental literature is a fact patent to all, but we fail to find in Dr. Fillebrown's book the slightest promise that dental science will be benefited by it.

WE have received a copy of the "TRANSACTIONS OF THE DENTAL SOCIETY OF THE STATE OF NEW YORK," compiled by Messrs. Jewell, C. C. Smith, and Frank Jones. The account of the Twentieth Annual Meeting is reported, and there is much interesting matter for perusal.

GOSSIP.

WE are authorized to state that licentiates in Dental Surgery of the Royal College of Surgeons of England will be welcome to the forthcoming conversazione, and should make immediate application for tickets to the secretary, stating whether they wish a single ticket or one to admit a lady in addition.

THE practice of dubbing professional men with familiar—not to say undignified or even facetious—titles, is not without its serious drawbacks. It is reported (with what amount of truth we cannot say) that an eminent anæsthetist, who administers nitrous oxide

largely, was knocked up at a late hour of the evening by the servant of an old lady in the neighbourhood, who sent post-haste to ask "would the gas man please come at once and bring his tools, as there was a frightful leak of one of the gas pipes?"

THE VALUE OF A TOOTH.—An action brought against a Boston (U.S.) dentist, for damages for extracting a sound instead of an unsound tooth, has terminated in a verdict for the plaintiff—damages, 150 dollars.—*Boston Medical and Surgical Journal*.

SIR HENRY LAYARD gives a personal experience of eastern dentistry which is calculated to startle some of the unfortunate neurotics who shudder at the very sight of dental steel:—"I had slept little, as I was suffering greatly from a toothache. The Sheik declared that there was a skilful dentist in the encampment; and as the pain was almost unbearable, I made up my mind to put myself in his hands rather than endure it any longer. He was accordingly sent for. He was a tall, muscular Arab. His instruments consisted of a short knife or razor, and a kind of iron awl. He bade me sit on the ground, and then took my head firmly between his knees. After cutting away at the gums, he applied the awl to the root of the tooth, and, striking the other end of it with all his might, expected to see the tooth fly into the air. But it was a double one, and not to be removed by such means from the jaw. The awl slipped, and made a severe wound in my palate. He insisted on a second trial, declaring that he could not but succeed. But the only result was that he broke off a large piece of the tooth, and I had suffered sufficient agony to decline a third experiment."

THE number of patients treated at the Birmingham Dental Hospital during the month of March was 474—males, 136; females, 183; children under ten years of age, 155. The operations were as follows:—Extractions, 399; gold fillings, 8; other fillings, 152; miscellaneous and advice, 105. Anæsthetics were administered in 38 cases.

THE SHAH AND HIS DENTIST.—After mature deliberation, and on the advice of his physicians and ministers, His Majesty has at length

decided on having a troublesome tooth removed. This operation has all the importance of an affair of State, and is performed by the Court dentist, a European who occupies a very prominent position,—he holds the rank of a colonel and the title of Khan. His Majesty awaits the momentous event sitting in an easy chair, and surrounded by the dignitaries of the realm and his European medical adviser. The dentist stands at a respectful distance with his instruments, until the Shah, in his peculiar gruff voice, exclaims : “H—, bya insha” (H—, step forward), when he advances towards his patient. The king closes his eyes, and the prime minister takes this opportunity to approach in a stooping position, and lay a purse full of gold tomans at his ruler’s feet as a solatium for the pain he is about to undergo. The other functionaries follow his example. Now the forceps is applied, and crack ! the tooth is out. A simultaneous shout of “Bravo !” is set up, the king and his dentist are congratulated, and the latter receives at once from the hands of the Shah one of the purses that strew the ground and a silk shawl of great value. The king then examines the offending tooth, which he bestows as a present on one of his favourites, and then gazes with rapture on the substantial tokens of sympathy that have been laid at his feet.—*Frankfurter Zeitung*.

WE have received a tiny pamphlet entitled “Remarks on the Dentists’ Act, by a Licentiate in Dental Surgery and a Member of the British Dental Association.” It contains valuable information about dentists, much required by the public, and in terse language warns the unwary against the advertiser and quack.

ONE of the readers of papers at a recent meeting of the Cleveland Dental Society is somewhat of a genius in his way. He says “Dental *therapeusis* is the science and art of restoring abnormal to normal conditions. *Therapeutics* has reference to the restoration of the soft parts distinctive from *therapeusis*.” What he really means is probably only known to himself. We confess ourselves fairly stumped.

DR. ROBINSON in the *Archives of Dentistry* thus writes, “Where there is only periosteal inflammation bathe in chloroform, and your

patient will be made happy in a few minutes." As an eminently ingenious form of "euthanasia" we commend this procedure to all philanthropists—dental or otherwise.

TO MAKE SHEET-WAX FOR TRIAL PLATES.—Take, of pure, clean wax, anywhere from one to five pounds, put in a tin bucket, or any deep vessel, with clear water sufficient to fill it within two and a-half inches of the top. Set on the stove till thoroughly melted, then set aside until partially cooled; skim all the air bubbles off. Then fill a smooth, straight bottle with *ice* water, a bucket of which you should have by you. Soap the bottle and dip it deliberately in the solution two or more times, according to the thickness you desire your wax. After the last dip, as soon as the wax hardens to whiteness, cut a line through it and remove it from the bottle as quickly as possible. Spread to cool and straighten out smooth while warm. Continue this process until all the wax is made into sheets. Any office boy or girl can do the work, and make enough sheet-wax in an hour—equal to any you can buy—to last a whole year. Paraffine, or paraffine and wax, may be made in the same way, and colored and perfumed to suit one's fancy. The water in the bottle should always be kept cold in order to get the best results.—*Archives of Dentistry*.

THE annual meeting of the Odonto-Chirurgical Society takes place on May 3rd in Edinburgh, and the dinner will be held at the Balmoral Hotel on the evening of the same day.

A PETITION is being sent round by the Charity Organisation Society for signature, which will be presented to the House of Lords, calling for an enquiry in regard to the administration and common organisation of voluntary hospitals and dispensaries, and Poor Law infirmaries and dispensaries in the metropolis. The subject of hospital management in London has become one of serious importance; and having regard to the fact that there exists what amounts to competition between the various institutions, compelling them to expend large sums of money beyond their regular income; that a great number of special hospitals exist which are totally unnecessary; and that there is no common understanding between the various hospitals and dispensaries, the time has surely come for a thorough enquiry into the whole subject.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

THE BRITISH DENTAL ASSOCIATION.

To the Editor of the DENTAL RECORD.

SIR,—Since writing the letter which appeared in your March number, I have happily discovered that I can claim acquaintanceship with one or two members of the British Dental Association, and therefore the preliminary barrier aforementioned, is, in my case, removed, but I still maintain that others are possibly less fortunate, and must perforce remain without the pale of the Association.

Perhaps the time I sacrificed in my futile endeavours to hunt up a "personal friend" member without success, caused me to envisage matters in a gloomier and more pessimistic spirit than I should have done had I previously read the courteous letters of Mr. Smale and "A Member B.D.A.," which you have published contra mine; but I wrote, not so much in my own interest, as for other regrettable instances of apparent ostracism from the Society, which suggested themselves from the position I then found myself in. Waiving, for example, all consideration for my own case, let us take that of the student of fifteen or twenty years ago, who, immediately on completing his studies, hied to a foreign land to practise. After many years he returns to practise at home, and recognising, as he undoubtedly does, the imperative necessity of supporting the British Dental Association, he is naturally anxious to join, but his old friends are scattered or gone, and he knows no one who can legitimately propose or nominate him. Shall I be told that the obstacle will be removed by some kind and well-intending officer of the Association? If so, well and good—my case is gone; but the explanation proves their regulation to be a farce and a deception. Having read the rules, this candidate would surmise he was ineligible for membership, and probably passively wait until he could become "personally" acquainted with some member, who might smooth his path and carry through the introductory business. Now, students of the present day would not be open to any such annoyance, for they are brought into personal contact with many of the members acting on the hospital staff, &c.; but it must be borne in mind that whilst there are hundreds of worthy and respectable non-diplomé but registered practitioners still existing, who have never had the privilege or opportunity of meeting many fellow professionals, and

who are therefore, as I have explained, ineligible for election, surely someone should suggest an expedient to meet this contingency, or it should be understood that the regulations are not always enforced—if such is an actual fact, and that anyone with a clean bill will be favourably received.

The motive of the original framers was obviously to separate the tag, rag, and bobtail element from the nobler and purer section of the profession, and every true dentist is in sympathy with that object; but it is seemingly a pity that this end cannot be attained without risk of compromising or excluding any of the said honourable portion of the profession.

I am, Yours, &c.,

April 12th, 1889.

REPOUSSÉ.

THE DENTAL EXAMINATION.

To the Editor of the DENTAL RECORD.

SIR,—The subjects of dental diplomas, education, and examination, have been fairly well ventilated of late, but there is one point in connection with the English examination which I should like to touch upon, viz., the difficulty of access to the examination room for purposes of inspection. No one will deny that a healthy influence is exerted both upon examiners and examinees by the presence of visitors, and nothing but unfair or incompetent examination could possibly object to the custom. Now it happens that nobody is permitted to visit the examinations at the Royal College of Surgeons except the full-fledged F.R.C.S., and as he is a *rara avis* amongst dentists, it follows that we hear very little about the *viva voce* questions asked of the aspiring L.D.S. It seems to me that some reform is required in the matter, and to meet the special case of dental surgeons, I think that everyone holding the M.R.C.S. should be permitted to visit the dental examinations. This would ensure the attendance of not a few dentists, and we should in this way really find out what sort of questions are put to the candidates. One or two of the examiners might protest, but this would be of little moment, and I am sure that the students themselves would feel that they were enjoying a fuller measure of fair play under the new arrangement.

I am, Yours &c.,

LONDON, April 25th, 1889.

M.R.C.S., L.D.S.

THE RECENT DISCUSSION ON ANTISEPTICS AT THE ODONTOLOGICAL SOCIETY.

To the Editor of the DENTAL RECORD.

SIR,—On page 153 of your Journal for April, 1889, a table is given relating to the antiseptic powers of a number of different substances, into which a few mistakes have crept which might cause unnecessary criticism if not corrected.

In the second line for	...	50,000	read	8,000
„ third	„ ...	6,000	„	5,000
„ fifth	„ ...	1,600	„	600
„ sixth	„ ...	1,500	„	500
„ seventh	„ ...	{ Oxide of Zinc ! }	„ { Chloride of Zinc	
		1,250	„ {	250
„ ninth	„ ...	120	„	20

Perhaps the simplest way to make the corrections would be to reprint the original table which I enclose, and which may also be found in the *Independent Practitioner*, 1884, page 283, and DENTAL RECORD, 1884.

I am, Yours, &c.,

BERLIN, April 11th, 1889.

W. D. MILLER.

Antiseptics.	Production of Acid (Development of Fungi) Prevented.		
Bichlor. of Mercury	1 in 100,000
Nitrate of Silver	1 „ 50,000
Peroxide of Hydrogen	1 „ 8,000
Iodine	1 „ 6,000
Iodoform	1 „ 5,000
Naphthaline	1 „ 4,000
Salicylic Acid	1 „ 2,000
Benzoic Acid	1 „ 1,500
Permanganate of Potash	1 „ 1,000
Eucalyptus Oil	1 „ 600
Carbolic Acid	1 „ 500
Hydrochloric Acid	1 „ 500
Biborate of Soda	1 „ 350
Arsenious Acid	1 „ 250
Chloride of Zinc	1 „ 250
Lactic Acid	1 „ 125
Carbonate of Soda	1 „ 100
Listerine	1 „ 20
Alcohol	1 „ 10
Chlorate of Potash	1 „ 8

ROYAL COLLEGE OF SURGEONS IN IRELAND.

PASS LIST.

THE following gentlemen have been admitted licentiates in dental surgery of the College, viz. :—John Charters Birch, Leeds ; Victor Massey Crosse, Angers, France ; Henry Williams Messenger London ; John George Wallis, Hull ; and Walter Williams, Eastbourne.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

PASS LIST.

DURING the April sittings of the examiners, the following gentlemen passed the first professional examination for the Licence in Dental Surgery :—John Thomas Jameson, Newcastle-on-Tyne ; John Cromar, Aberdeen ; Alexander Wilson, Glasgow, and George William Stringfield, Sussex ; and the following gentlemen passed the final examination, and were admitted L.D.S.Edin. :—Albert Maurice, London ; Arthur Percy Stocken, Ealing, Middlesex ; Alfred Edward Donagan, Cambridge ; George William Stringfield, Sussex ; John Pryse Roberts, Kirkdale ; Henry Mallet, Devonshire ; Frederick Page, Edinburgh ; John Crostwhaite M'Namara, Cumberland ; Henry Hepburn Chapman, Edinburgh ; John Thomas Craig, Warwickshire, and Thomas Jackson, jun., Preston.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from March 1st to March 31st, 1889 :—

			London.	National	Victoria.
Number of Patients attended	...	...	—	2071	986
Extractions	{ Children under 14	...	413	261	664
	{ Adults	...	939	473	
	{ Under Nitrous Oxide	...	1021	815	
Gold Stoppings	...	...	454	152	58
Other Stoppings	...	...	1273	528	137
Advice	...	...	154	585	—
Irregularities of the Teeth	...	...	147	122	—
Miscellaneous and Dressings	...	...	412	172	275
Total	...	...	4,813	3,088	1,275

ANNOUNCEMENTS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE next meeting of the above Society will be held at 40, Leicester Square, W.C., on Monday, May 6th, at 8 p.m. *Business*—Paper by Mr. A. Kirby, of Bedford—"Electrical Progress and Dental Practice;" Paper by Mr. David Hepburn—"A Few Remarks on Suction Plates, Air Chambers, and Artificial Rugæ."

STUDENTS' SOCIETY OF DENTAL HOSPITAL OF LONDON.

NEXT meeting on May 13th, at 7 p.m. Paper by Mr. S. Read on "Syphilis as it Affects the Mouth."

NATIONAL DENTAL HOSPITAL STUDENTS' SOCIETY.

THE next meeting of the above Society will be held on Friday, May 3rd. Paper by Mr. Allnutt on "Anæsthetics."

ODONTO-CHIRURGICAL SOCIETY.

THE Annual Meeting will be held in the new hospital premises, 5, Lauriston Lane, Edinburgh, on Friday, 3rd of May, at 2 p.m. W. H. Williamson, M.D., President, in the chair. A paper by Mr. G. W. Watson, L.D.S., on "The Organisms of the Mouth, and their Association with Disease," illustrated by specimens under cultivation and lantern slides. *Casual Communications* by the President on Porcelain Inlays; also one by Mr. Andrew Wilson.—JOHN S. AMOORE, *Sec.*

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, James Street, Buckingham Gate, S.W.

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, Lexington Street, W.

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and *Answers* are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

L. M. F. writes:—"A lady calls upon me requiring a tooth and clasp added to her plate; her time being much occupied, and being unable to leave the case then, an agreement is made for the work to be done on the following day. To save time, a model is taken, and I agree to get as forward in my preparations for the repair as I can, to enable her to have the plate back with as little delay as possible. The following day I receive a note stating she is prevented from calling, but will do so in the course of the week; but to the present time have not seen or heard anything of her (now two months, though have written requesting a visit or explanation. One guinea was to be the fee agreed upon. What part of that am I entitled to for consultation and trouble?"

* * We think that L. M. F. is entitled to the fee in its entirety, as a verbal contract was made which he has always been ready to fulfil. Whether he would be wise in pressing for payment is a matter which lies entirely within his own discretion. As a broad general rule we think that legal proceedings for the recovery of professional fees should be avoided as far as possible.

QUERIES.

MAGNETISED TWEEZERS.—A few months ago I found that a pair of nickel-plated tweezers, which I had used daily for years, had become highly magnetised at the tips, and they do not seem inclined to resume their proper state. Can any one enlighten me as to the reason why they should have become so affected, and direct me how to *de*-magnetise them? It has been suggested that they may have been laid alongside a strong magnet, but they have never been out of the surgery to the best of my belief.—F. A. B.

POLISHING DISCS.—The great objection to sand paper and emery discs is that they soon lose their rigidity, and if a little moisture should get in the way, they soon become sodden and useless. Can any of your readers recommend some plan of making the disc rigid without bulkiness? I think Mr. Brunton showed some novel discs a little while back; has he any suggestion which would assist me?—ENQUIRER.

FLAX THREAD.—I believe that flax thread is used instead of silk by some dentists. I have been unable to get any thin enough. Is it made of suitable thinness? and is it as strong as flos silk?—RUBBER DAM.

ANSWERS.

DUPLICATING COMPOSITION.—In reply to "York," I have had no experience with any material sold for this purpose, but have used the following with perfect success in complicated mouldings with deep undercuttings.

Soak one pound of amber gelatine, such as can be bought from any grocer, in cold water for five or six hours; drain all the water away, melt the gelatine at a low temperature, and when perfectly melted, add five pounds of commercial glycerine. This mixture, from repeated melting, becomes thick, but can be restored to its original state by the addition of a little water when melting.

Before pouring the composition, the surface of the model should be varnished, and after the varnish is dry, the surface must be covered with a thin film of oil to prevent adhesion. If the composition referred to by "York" is similar to the above, it can be made thin by the addition of a small quantity of water; if it is sticky and brittle this is caused by an excess of glycerine, which can be remedied by the addition of a small quantity of soaked gelatine. It is important that the gelatine shall be perfectly melted before the glycerine is added; if mixed cold there is great difficulty in obtaining a perfect combination.

The composition is permanent, does not spoil with keeping, and can be used constantly for years without deterioration if the water lost by evaporation is replaced.

A cheaper compound with similar properties can be made with soaked glue and treacle, but this is much more liable to tearing apart, and varies greatly in hardness in cold or hot weather.—THOMAS FLETCHER, Warrington.

PLATE GAUGE.—There are standard English gauges for both plate and wire, which can be obtained at any good tool shop. They can be bought at Cotton & Johnson's, Gerard Street, Soho, W. The gauges referred to in American books are not those which are generally used in this country.—AN OLD FILE.

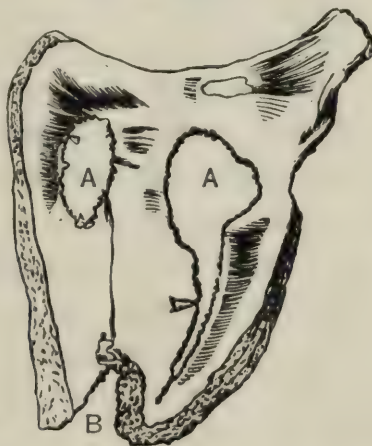
Original Communications.

A CASE OF ABSORPTION IN A PERMANENT TOOTH, AND ITS SIGNIFICANCE.

By FREDERICK J. BENNETT, M.R.C.S., L.D.S.

WHILST examining a collection of old teeth, the following specimen came under my notice, which is of interest, partly from its presenting a pathological condition of uncommon degree, and also as illustrating the steps employed by nature for the removal and repair of injured tissues.

The tooth was a well formed lower molar which had been attacked by caries upon the approximal surface at its junction with the cervix. The cavity, together with the pulp chamber, was filled with osteo stopping, which was in good condition. On section, however, the pulp canals were found to be empty, and showed no signs of having been treated. The surface of the fangs presented the usual appearances of long continued chronic inflammation, being thickened with patches of porous light-coloured cementum, and having vascular canals here and there penetrating the substance of the



LOWER $\frac{2}{3}$ OF ANTERIOR FANG OF LOWER MOLAR (*Magnified*).

A.—Cavities produced by absorption.

B.—Region of external absorption.

tooth. Indeed, it was due to one of these apertures of unusual size, and with rust coloured margins, that my attention was first called to the case. Situated midway between the neck and apex of the anterior fang, it was found on section to terminate in two large cavities representing the pulp canal, which at this point had become extended in various directions greatly beyond its original size. (*See FIG.*)

Under the microscope, it was found that the cavities and the channel leading to them were everywhere attacked by absorption, presenting the conspicuous lunated outline known as Howship's lacunæ. The margins were also stained with the rust colour of hæmatin crystals.

The cementum covering the fang was thickened, and towards the apex there were signs of alternations of absorption and deposition.

This direct and extensive attack upon the interior of the tooth suggests the existence of some source of irritation within the fang injurious to the surrounding vital cement and periosteum; and further, that it was for the removal of this source of mischief that the process of absorption was set in action.

Quite recent investigations have shown that the leucocytes are the essential agents in the process of absorption, the mass of highly vascular granulation tissue found lining these absorption cavities being the means by which the absorption cells are brought into actual contact with the affected tissue. These absorption leucocytes, or phagocytes, as they are called, migrating from the capillary vessels of the granulation tissue singly, or uniting together to form giant cells, attack and take into their interior the particles to be removed. 'In the giant cells,' remarks Mr. J. Bland Sutton, "we have the counterpart of the fusion of phagocytes, the large multinuclear osteoclasts seen in places where vertebrate bones and teeth are undergoing absorption, must also be placed in the same category."*

The recognition of the nature of the osteoclasts as originating in the leucocytes may be considered as a great step in advance, as it leads one to regard many of the processes at work in the hard and soft tissues as essentially similar in nature. According to Ziegler, "Recent researches into the absorption of bone appear to place it on a level with absorption of other tissues, and to view them all from the same stand point."†

Although it is common in the soft parts and in bone to find diseased tissue becoming detached in the form of a slough, or of a sequestrum at its line of junction with the healthy tissue, by the interposition and activity of the phagocytes, this is possible only in tissues possessing a vascularity sufficient for the conveyance of the cells to this situation. The cementum, however, possesses no such

* Introduction to "General Pathology," p. 124.

† Ziegler's "General Pathology and Anatomy," p. 160.

system of capillary vessels throughout its substance for the circulation of blood cells, as is the case in the Haversian canals of bone, consequently this method of removal of diseased tissue by exfoliation does not occur. The process adopted in this instance is essentially similar to that occurring in the molecular absorption, or true caries, of bone. The phagocytes channel a passage along the course of one of the nutrient blood vessels entering the cementum; the channel becomes lined with the granulation tissue which penetrates the dentine and ultimately spreads itself over the surface of the fang canal, allows the migrating cells to absorb and remove the diseased dentine down to the surface of the living cementum.

I am inclined to regard this specimen as illustrating a conservative aim on the part of nature. As will be seen from the drawing, which represents a section of the anterior fang only, the form of the absorption is different from that usually seen in permanent teeth which are being shed. In the latter case, the fang is either shortened or reduced in circumference, and the cementum is equally—if not more—absorbed than the dentine. In this specimen the struggle to maintain the cementum in an efficient condition is exemplified by the patches of removal and redeposition of cementum which occur in various places.

I have not met with an instance in which repair has followed to such an extent that the fang cavity comes to be again occupied by fresh nutrient tissue, but a remarkable specimen described and figured by Mr. Salter* inclines me to the belief that this may sometimes take place. In this case well formed bone with Haversian systems had come to occupy a large portion of the pulp cavity, which latter bore traces of previous lacunal absorption. The pulp cavity had three circular apertures entering it from the external surface a little below the neck, and these were also lined by bony tissue. The ossification of granulation tissue in my own specimen would probably have led to similar appearances.

IMPLANTATION OF TEETH.

By R. E. JONES, L.D.S.I.

IMPLANTATION may be shortly defined as "an operation by which a tooth belonging to a person other than the patient operated upon, is inserted in the jaw." Although as a curiosity in dentistry it is

* "Dental Surgery and Pathology," p. 79.

pretty well known—having engaged the attention of most of the leaders of the profession for many years past—it has never become a common or popular operation, probably through a number of causes which it is unnecessary to enumerate. Recently, somewhat of an impetus has been given to implantation by the experiments of Dr. Younger, of America, and others ; but in considering the field of this operation, it will be well not to ignore its undoubted drawbacks and dangers. It may be premised that the same influence which has tended to introduce crown and bridge work, viz., the intolerable objection on the part of patients to wear plates, has also hastened the extension of the operation of implantation.

As now performed, implantation consists in drilling an artificial socket in the alveolus of the patient of sufficient depth for the predestined tooth, which has previously been carefully cleansed, stopped, or otherwise prepared and disinfected, and inserting it in the cavity so formed. It is then secured in position by ligatures fastened to the adjoining teeth. Presuming that a healthy patient is selected for the operation, and also that the gum tissues and jaws are beyond reproach, it is an undoubted fact that implantation can be performed successfully, the implanted tooth ultimately becoming a useful member, and after a time scarcely distinguishable from its neighbours. The exact pathological changes which occur as the tooth becomes accustomed to its surroundings—or rather as the jaw becomes tolerant of the stranger—are not known, but they are probably similar to those which are active in the process of repair. Whether a tooth membrane, analogous to the alveolo-dental membrane is ultimately formed is a moot point ; but it is remarkable that in the most successful cases, the nourishment afforded to the implanted organ apparently equals that of its fellows. Thus the tooth gradually assumes a life-like hue, and its root becomes firmly impacted in the jaw. The conditions which favour a successful implantation are, first, a robust constitution, and secondly, freedom from a tendency to congestion or inflammation. To perform the operation upon a patient having the tuberculous or scrofulous diathesis, or syphilitic taint, is to invite failure, and, further, to probably set up an unhealthy process in the jaw, ending, as most of these cases do, in severe ulceration of the soft parts and necrosis of a portion of the maxilla.

Few British practitioners will care to imitate Dr. Younger of America, who takes, so he says, a tooth haphazard from his surplus extractions ; but it is well to insist that the predestined member

should be chosen with due care, therefore, a tooth partially destroyed by caries should only in very exceptional circumstances be employed. Teeth extracted from sockets where acute or chronic periostitis has supervened are likewise to be eschewed, and it is scarcely necessary to add that one from the seat of an alveolar abscess should not be used under any circumstances. In a word, it is essential that the cementum of the implanted tooth be of the healthiest character, as it is through this source that the tooth is nourished.

In some of the most recent cases of implantation it is recorded that in boring for the new socket the antrum has been pierced. This, a formidable accident, is, however, only one of a series which may easily occur. Unless great care is taken, it is possible to run the drill into the dental canal, and here mischief of a more serious character might ensue. In cases where the bone is very thin, and most of the alveolus absorbed, the dental canal is in close proximity to the upper margin of the bone, consequently the requisite depth for a suitable socket cannot be obtained, and the operation is in such cases contra-indicated. When we reflect that serious consequences have occasionally followed the simple operation of pivoting a tooth (Tomes records a case of death from this cause), and that trismus and tetanus have supervened after apparently trifling injuries to the jaw, it will be readily conceded that the boring of a new socket is scarcely unattended with danger. As regards the permanency of implanted teeth, it is too early to dogmatise upon the point, but a clue is obtained in another direction. It is well known to most practitioners that roots of teeth which have their pulps destroyed eventually become absorbed.

In the case of a pivot tooth it not unfrequently happens that absorption is so great that the pivot is exposed through one of the walls, the root becomes loose and is subsequently lost. Absorption also gradually undermines the roots of "replanted," and doubtlessly also implanted teeth; more frequently the "stranger" is bodily extruded from the socket and another failure is recorded. Any injury to the implanted one producing loosening, also endangers its existence, and as this accident usually occurs during its early career, it is evident that a large number of failures will result from this cause. In my opinion the application of the operation of implantation is of a very limited nature. I think it worthy of a trial in cases of vertical fracture of any of the front teeth, where the root is also implicated; in other cases the judgment and experience of the practitioner must decide as to its suitability or otherwise.

TWO CASES OF SEVERE ULCERATION OF THE INFERIOR SURFACE OF THE TONGUE IN INFANTS.

Under the care of MR. E. LLOYD-WILLIAMS.

Reported by MR. A. HOPEWELL SMITH.

CASE I.—A baby, female, *aet.* 13 months, was brought to the Dental Hospital of London, on April 3rd, 1889, for advice with regard to a superficial ulceration of the tongue, on its inferior surface.

For the first three months after birth, the child was somewhat delicate; since that time, however, she has had good health, and has suffered from none of the diseases incidental to childhood. About one month before Christmas, and when she was eight months old, the two lower central incisors were erupted. No special symptoms were observed at the time. Within a few days of the appearance of the teeth, the mother noticed a small white ulcer on the under surface of the tongue, which came into close contact with the cutting edges of the teeth, when the child put out its tongue, or took the breast. The centrals, after eruption, were normal in shape, but they had sharp cutting edges. The ulcer did not appear to be painful; it gradually increased in size by spreading, and sometimes there was slight hæmorrhage from its surface. When the child was put to the breast, it generally bit the nipple, and always "sucked hard." As the ulcer did not improve, the baby was taken to a children's hospital, whence she was sent on here.

Examination of Mouth shows a large, flat, superficial ulcer, whitish in appearance, with raw everted edges, and it is oval in shape. The teeth are fully developed, and normal in appearance.

Treatment.—Extraction of the lower central incisors was recommended, but the mother objected to this. She returned to the hospital, where she received some borax and honey to apply to the tongue. She was also told to wean the child at once.

May 15th.—Mother began to wean the child on April 4th. The child is now quite well, and is cutting her upper centrals. The ulcer was healed about 8 or 9 days after the baby was first weaned and all that can now be seen is a small whitish cicatrix on inferior lingual surface.

CASE II.—A baby, male, *æt.* 1 year 8 months, was brought on April 10th, for advice concerning an ulcer on inferior surface of tongue.

The child was of the imbecilic mongolian type, small, and rickety, there being some beading of the ribs. The eyes were weak, and internal strabismus was present, being more marked on the left than the right side. It was being treated at a children's hospital for marasums. In December 1888, both jaws were perfectly edentulous. About three and-a-half months ago, and when the baby was seventeen and-a-half months old, the first tooth was erupted. This was the first right upper temporary molar. Shortly after, the first left upper temporary molar, and first right lower temporary molar, appeared. Two months ago, the two lower central incisors were erupted. Their eruption was unaccompanied by much pain, or any severe symptoms due to teething. Quickly then followed a small white ulcer which was obviously caused by contact of lower teeth with the tongue.

Examination of the Mouth.—On inferior aspect of tongue, a small superficial ulcerative growth, more or less circular in shape and circumscribed, was seen. Its presence was first noticed by the mother about a month ago. The cutting edges of the centrals are sharp and pointed, the teeth themselves being cylindrical in shape, with pyramidal crowns. They were also poor in quality and very small.

Treatment.—The lower centrals were extracted April 10th. The child was brought to the hospital by request to-day (May 8th). He has had no pain, nor complained of anything whatever. The ulcer is practically healed and the tongue is not swollen.

[*Remarks* by Mr. LLOYD-WILLIAMS.—These two cases are of interest as illustrating the severe ulceration which may ensue in the mouths of infants from mechanical irritation. The cases present several features common to both, while there are differences which are distinctly pronounced. I had no hesitation in recommending the extraction of the offending teeth in both cases, having regard to the urgency of the symptoms, and the difficulty of adequately removing the sharp edges without injury to the teeth. In the first case, although the treatment recommended was not adopted, and the ulceration was disposed of by palliative measures, it must be borne in mind that the child was strong and healthy, and probably great care was taken with the feeding in avoiding further irritation of the tongue. In the second case I feel sure that the ulceration would not have yielded readily to any treatment short of extraction of the teeth, for the child was older than the other one (nearly two years), and was particularly restless, protruding its tongue in all directions; and being exceedingly delicate, it was necessary to relieve

it of all oral irritation as speedily as possible. How the extraction of the temporary centrals in very early life is likely to affect the permanent dentition is a point upon which I have not sufficient experience to pronounce an opinion.]

FOREIGN REVIEWS.

(By our Special Correspondent.)

PLASTER COMBINED WITH MERCURIC PERCHLORIDE.

IN last month's *L'Odontologie*, M. Paul Lehr recommends plaster (plâtre) mixed with a one per thousand solution of mercuric perchloride in water as a capping for exposed pulps. He lightly presses the mixture into place by means of a piece of amadou, which has the effect of absorbing the surplus moisture, and so causing a rapid setting of the plaster. He next dries it with hot air from a ball syringe and then varnishes it with an ethereal solution of mastic. He fills the cavity over this with cement or amalgam. The proportion of successful cases is not stated. Presumably, the plaster referred to is plaster of Paris, but the word used is merely "plâtre," not "gypse," so that the nature of the plaster is left in doubt.

The same mixture is used for filling root canals, except that, in this case, the mercuric solution is of a one per 500 strength. After preparing the canals in the usual way to ensure asepticity, the author injects by means of a Pravaz syringe, the following solution:—

Mercuric perchloride	...	...	...	...	0.20 grammes
Gum mastic	...	...	...	...	10 "
Ether	} of each	...	...	...	50 cubic cents.
Alcohol					

This provides an antiseptic coating for the inside of the canal. The canal is then filled with the plaster mixed with the $\frac{1}{5}$ per cent. solution of mercuric perchloride. This is dried with hot air, and the cavity afterwards filled with cement or amalgam.

If, after the main mass of pulp has been destroyed by arsenic and removed, there remain portions of living tissue, these are treated with respect. The cavity is cleansed and dried up to the point of sensitiveness, then mopped with the ethero-alcoholic solution of mercuric perchloride, and finally filled with the said mixture of plaster.

M. Ch. Witzel, it seems, had previously recommended the use of plaster mixed with mercuric perchloride as a root filling material at the Dresden Dental Congress. Both authors claim very good results.

CASE OF PARALYSIS (?) FOLLOWING TOOTH-EXTRACTION.

M. LEHR, in *L'Odontologie*, mentions the case of a lady of 25, anæmic, who applied to have a first left lower molar extracted. Its pulp was gangrenous, and its pericementum inflamed. The tooth broke ; the posterior root was partly dislodged, then removed, on the forceps being exchanged for the elevator. The patient now fell into a condition of syncope, and the extraction of the anterior root was deferred. After ten minutes the patient revived, but the fore arms became paralysed (?), the hands drawn in, and the fingers stiffened. The elbow joint could be moved with difficulty. After a quarter of an hour of friction, the elasticity of the fingers seemed to be coming back, but a new crisis was felt by the patient, and the paralysis (?) seemed to be attacking the lower limbs. The patient was supported and made to walk about. The legs regained their power at once, but the paralysis of the arms remained as marked as ever. Half an hour after the extraction the patient was able to go home, accompanied. Three hours after the extraction she could use her hands with great difficulty. Electricity, frictions, and warm baths were used with the effect of restoring the wonted suppleness to the arms. The fore arms, hands and fingers remained insensible to pin pricks. It is not stated how soon full recovery took place, which it may be presumed happened sooner or later. The writer attributes the phenomena to the anæmia. The patient was at the time having her monthly course, which was usually very copious, and lasted eight to ten days.

In the discussion which followed the reading of the above communication, it was remarked that it was a fortunate thing no cocaine was administered, otherwise the phenomena would have been attributed to the drug.

NOTE ON MICRO-ORGANISMS OF DENTAL CARIES.

By M.M. GALIPPE AND VIGNAL.

UNDER the above heading appears in last month's *L'Odontologie* a paper confirming the discoveries of Messrs. Underwood and Mills, that micro-organisms penetrate in great numbers into the apparently healthy tissue adjoining that attacked by caries. Strangely, however, the names of the two English observers are not even mentioned in the article.

M.M. Galippe and Vignal claim to have isolated six kinds of

micro-organisms taken from the tubules of dentine. They thus continue :—

Among these six kinds we have always met with four in every one of the eighteen teeth we have examined. We have met with another kind eight times, and a sixth five times.

1st. The first kind constantly met with is a short thick bacillus not forming chains. It is nearly as broad as it is long. Cultivated in gelatine it rather rapidly forms a white track, then after three or four days it begins to liquefy the gelatine while turning it opaque and white. The little colonies of growth stand out slightly in relief from the surface of the gelatine. The organism coagulates the casein of milk and forms lactic acid in it.

2nd. The second kind is a bacillus which is about twice as long as it is broad. It is slightly constricted in the centre. Its culture is very like that of the preceding, but its colonies spread over the surface of the gelatine more before liquefying it. It likewise forms lactic acid with milk.

3rd. The third kind is a bacillus which is very like the preceding one in appearance except that it has no constriction. It is squarely cut at the ends and forms rather long chains, especially in liquid menstrua. It does not liquefy gelatine, but softens it a little. It develops almost as well in a vacuum as in air and causes the formation of bubbles of gas in the gelatine. In both the quantity of gas produced is scarcely appreciable. It does not form coagula in milk and in the long run renders the casein incapable of coagulation by acids. It turns the milk into a yellowish brown fluid.

4th. The fourth kind is a very short, very thin bacillus, nearly as broad as long; at first sight it would be taken for a coccus. It forms a white track in the gelatine which quickly becomes yellow, then it liquefies it. It changes the casein of milk, which soon gives out a very offensive odour and turns all the media in which it is cultivated brown. It causes the solution of fibrine.

5th. The micro-organism which we have met with eight times is a bacillus which is rounded off at its ends. It first forms a white track in the gelatine, then liquefies it, forming a turbid fluid. It changes milk, without coagulating it, into a brown fluid, which in time becomes nearly black and gives out an offensive odour.

6th. The micro-organism we have met with only five times is a rather large coccus. We have mentioned that we have met with it only in teeth far advanced in caries, when the tubules would be very

much enlarged in size. It could not be otherwise, as the coccus would be too big for an ordinary tubule. It forms whitish tracks in the gelatine, but does not liquefy it. It coagulates milk, forming lactic acid, which may accrue in considerable quantity if the precaution is taken to neutralize the acid *pari passu* with its formation.

Besides the six micro-organisms we have just described, we have met with three other kinds in the inflamed pulp of carious teeth, which pulps had no visible communication with the carious cavity. It is worth noting that we have not found these micro-organisms in the dentine. In the deep parts of the inflamed pulp, besides several of the above-mentioned micro-organisms, we have found three others of different species.

1st. The *bacterium termo*. This exists in nearly all decomposing animal matter, and plays a preponderating part in their destruction.

2nd. A bacterium previously described and designated by the letter C. It acts on animal matter, reduces sugar and forms lactic acid. These two micro-organisms have been found in all the inflamed pulps we have studied.

3rd. In a pulp which was more heavily infected, we found the *staphylococcus pyogenes aureus*. Its characteristics are too well known to need description here.

The biological properties of the micro-organisms which we have isolated, seem to us to correspond very exactly with what is to be observed in the progress of dental caries.

The writers, after remarking that the organisms which form lactic acid dissolve the mineral part of the tooth and those which can dissolve animal matter, do so, and thus complete the destruction, promise in the near future more information on this interesting subject.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ordinary monthly meeting of the above Society was held at 40, Leicester Square, on Monday, the 6th ultimo, Mr. FELIX WEISS, in the absence of the President, in the chair.

The LIBRARIAN (Mr. Ashley Gibbings) reported the receipt of the usual quarterlies, including the journals of Anatomy and Physiology,

and of Microscopical Science. Also several periodicals from Mr. W. E. Harding.

The CURATOR (Mr. Storer Bennett) stated that Mr. Preston had presented to the Society a lower molar and a lower molar root which were very largely exostosed, and were extracted with great difficulty.

Mr. CHARTERS WHITE referred to the discussion on Antiseptics introduced by Mr. R. H. Woodhouse at the March meeting, and read a communication upon the subject. He reminded the Society that forty years ago creosote in conjunction with arsenic and morphia was employed to devitalize exposed nerves, but he had not obtained satisfactory results by that method. Carbolic acid had superseded creosote. This agent in combination with arsenic was useful, and in conjunction with eucalyptus or sanitas oils met with a fair amount of success. Latterly Mr. White had used Kingzett's Bactericide (which is a preparation of 5 per cent. mercuric perchloride in combination with 5 volumes of peroxide of hydrogen) with much greater satisfaction as an antiseptic. The preparation being nine times too strong for use, it should be diluted; the addition of 6 ozs of water to 1 drachm of the bactericide would give 1 part mercuric chloride in 1,000. As the peroxide of hydrogen is apt to split up if kept, it is not desirable to make a large quantity of the preparation at one time. Metal instruments should not be allowed to come in contact with the solution or they would become corroded.

The CHAIRMAN, in inviting discussion, remarked that the subject was one of deep interest. As was well known, corrosive sublimate, of which a 1 in 5,000 solution was sufficient for all purposes, was recommended by the Metropolitan Board of Works. The only fault which he had to find was that the peroxide of hydrogen was so easily decomposed.

Mr. WALTER H. COFFIN thought highly of Kingzett's solution, but observed that if it required, in the opinion of those who use it, to be largely diluted with water, he would suggest that it should be diluted with peroxide of hydrogen in preference, inasmuch as peroxide of hydrogen rapidly decomposes in contact with water. With reference to the chairman's remarks, his experience was that a 5 per cent. solution kept very well, but the strong solutions did not. The stronger solutions were very valuable but would rapidly degenerate to a 5 per cent. solution if kept.

Mr. GEORGE CUNNINGHAM (Cambridge) wished to corroborate the remarks of the last speaker, having been in the habit of using a

similar preparation, viz., in combination with peroxide of hydrogen, using a ten volume instead of a five volume solution as mentioned, and mercuric perchloride of different strengths. He also used mercuric perchloride 1 per cent. solution, and should have no hesitation in using it to syringe out pulpless teeth under the rubber dam—of course, it was known that a 1-1,000 solution was constantly and freely used without the protection of the rubber dam—even stronger solutions might be used with the rubber dam, providing great care was taken. As an apparatus for the purpose, he thought that the small syringe suggested by Dr. W. St. George Elliott was the best, being superior in his opinion to the glass tube and rubber arrangement, because the platina tube attached to the hard rubber stock, carrying the small soft rubber bulb, was sufficiently fine to nearly coincide with the diameter of the canal. They might be used for a long time without being deteriorated by the action of the chloride of mercury.

Mr. STORER BENNETT desired to say for the benefit of those who wished to use a strong solution, that there was a preparation in the market made by Mr. Robbins, chemist, of Oxford Street, known as "Robinat," which was a combination of peroxide of hydrogen and chloride of mercury, the exact proportions and method of preparation being a trade secret. Twenty volumes of this would last for twenty minutes without deteriorating. He found the small syringe for hypodermic injection, to be obtained at any of the dépôts for 3s., extremely good.

Mr. C. J. BOYD WALLIS, by way of illustrating what a patient will sometimes undergo rather than lose a tooth, showed one, the root of which was riddled by absorption in all directions. It had been first of all filled with gold, and the pain was temporarily relieved. It had then been drilled into and filled with amalgam. The nerve was destroyed, but the pain still continuing, the tooth was extracted, the root filled with gold, and replaced. The pain did not cease, and the tooth had finally to be taken out.

Mr. CHARTERS WHITE, from the description of the tooth, thought he recognised it as one taken out by himself.

Mr. BOYD WALLIS interposing, said that it was given to him by Mr. Parmley.

Mr. CHARTRES WHITE, continuing, said the history of the tooth, so far as he could gather from the patient, was as follows: being very troublesome it was extracted by a dentist at Nottingham. On

examining it he found a small portion of a Donaldson's barb imbedded in it. He withdrew the barb, filled the tooth with gold, and (to use the patient's own words) "hammered it into its place again." The patient coming to him (Mr. White) he took it out and found it riddled in all possible directions with pus.

Mr. DAVID HEPBURN read a paper entitled—

A FEW REMARKS ON SUCTION PLATES, AIR CHAMBERS,
AND ARTIFICIAL RUGÆ.

He did not propose to deal exhaustively with the subject, but rather to throw out a few ideas which might form a basis of discussion. It might be interesting to dwell shortly on the natural forces which assisted the retention of suction plates. What was commonly known as a "sucker," by which weights and stones are raised from the ground, might, upon superficial consideration, be thought sufficiently to explain the means by which artificial dentures are held *in situ* unaided by clasps, valves, and springs, but such was not the case. Taking the force of "adhesion" it would be only necessary for their purpose to take two of the various kinds of that force, viz.: the adhesion of solids to solids, and fluids to solids. If two pieces of smooth glass were pressed together, they would be found to adhere firmly, but this was not entirely due to atmospheric pressure, for if the two pieces of glass were suspended in the vacuum of an air pump the union would not be disestablished, showing that some other force had been at work in holding them together; this was the force of "adhesion." The adhesion of solids to liquids might be exemplified in like manner by lowering a finely balanced piece of glass on to the surface of a liquid; when raised again, globules of the liquid would be found clinging to its under surface. According to the nature of the liquid the adhesive force would be evidenced in a greater or lesser degree. But although "adhesion" is an independent force, it should be remembered that exclusion of air was a condition of its operation—a fact of practical importance in its application to artificial dentures. Another force which had an influence in connection with the subject of his paper was "capillary attraction," which for their purpose might be defined as "the tendency which a fluid has to find its way between closely fitting surfaces." And it was not difficult to understand how, when an artificial denture is held steadily in the mouth for a time, either by pressure of the hand or antagonism of the opposing teeth, the

saliva influenced by this force would prove a valuable agent in excluding air for establishing the desired adhesion. Mr. Hepburn then invited a brief consideration of the laws of atmospheric pressure, pointing out that being a fluid, and following the laws of fluids, under normal conditions the atmosphere exerts an equal pressure in all directions. But if the normal conditions were interfered with, the force of its pressure might be made evident. This was well illustrated by adjusting two hollow brass cups and exhausting the contained air, the force then required to separate them would be found to be considerable. This was very much the condition endeavoured to be established in the application of an air-chamber, but it would be seen how an endeavour to enlist atmospheric pressure as a retaining force is frustrated by the nature of the oral structures when influenced by natural laws. It was also necessary to bear in mind the property of elasticity which atmospheric air possessed in a marked degree, of which the ordinary operation of cupping furnished a good example. The air being exhausted in the cup the soft tissues immediately rise to fill the space, forced on by the unopposed pressure of the air in the body acting by its inherent elasticity, and much the same thing occurred when the plate with its air-chamber was applied to the roof of the mouth. It shortly becomes filled with tissues, and when this happens, as an air-chamber it ceases to act. When a plate with an air-chamber is applied to the mouth there is in any case an attempt of nature to do away with the vacuum which is caused by its application to the surface of the mucous membrane. In order that air pressure may act as a retaining force in such cases it is necessary that a vacuum should exist, and considering that in the most favorable circumstances only a partial vacuum can be obtained, Mr. Hepburn was inclined to think that air-chambers, as such, are of comparatively little service. How far their action could be increased by the use of suction valves, such as those invented by Brownlie and Leman, was a matter, he thought, well worthy of the consideration of the Society. Hall's suction disc—the type of the original “sucker”—had enabled at least one patient, to his knowledge, to retain an upper plate, under apparently the most hopeless conditions. Mr. Hepburn desired to acknowledge the great usefulness and importance of “chambers,” as a means of equalizing pressure—in cases, for instance, of edentulous upper jaw, where the remains of the alveolar ridge are covered with soft, yielding spongy mucous membrane, while the dome of the palate remains hard and resisting.

In conclusion, Mr. Hepburn showed some beautiful specimens of artificial rugæ, and gave a detailed explanation of their construction.

The CHAIRMAN said that the subject was an eminently practical one. He would not offer many remarks himself, but he might state that he had an objection both to suction discs and air-chambers and everything except the intrinsic fit of the denture. Where a good model had been taken he had rarely had any difficulty in holding up a piece of work. He had seen some cases where much annoyance had been caused by the soft tissues growing into an air-chamber.

Dr. WALKER thought the Society was much indebted to Mr. Hepburn for the manner in which he had introduced the subject. So far as his experience had gone with regard to suction chambers Mr. Hepburn had hit the point completely. He agreed with him as to the usefulness of suction chambers for the retention of plates in the case of edentulous upper maxillæ. The absorption of the soft tissues into the air-chambers, he suggested, would be avoided if the plate were worn only sixteen hours out of the twenty-four.

Mr. AMOS KIRBY (Bedford) would not detain the Society for more than a moment. His experience coincided with the Chairman's, if great care were taken to prevent hard pressure on the median line. After always taking a very careful model he found it an advantage to fit pieces in with an ordinary piece of blue manifold paper. This marked down the precise line where there was excessive pressure. But in addition to this he always used a modification of what is known as the "Fulsome ridge," originally described, he believed, by Mr. Walter Campbell of Dundee, and immediately adopted by himself. He did not make the spurs pass round the whole of the palate but only on either side of it. Even when the palate is very flat he found it the only expedient necessary.

Mr. GEO. BRUNTON (Leeds) remarked, that some years ago, Mr. Fletcher said his idea of a suction plate was to have a large number of small cylinders distributed over the plates. Following this idea, he made plates with a number of these small cylinders. Referring to gold strengtheners for vulcanite he found that by passing a piece of sand paper over the gold between the rollers, he obtained a roughened surface.

Mr. FAIRBANK thought that suction chambers are not needed in artificial dentures; he had never, on a single occasion, made use of them himself, and was of opinion that they only weaken the plate and make the palate thicker. He found scraping the palate on each

side of the median line of assistance in supporting whole dentures. An examination of the palate in most mouths would show that on each side of the median line the mucous membrane is much softer than over the ridge.

Mr. G. CUNNINGHAM (Cambridge) desired to say a few words as a patient. Unfortunately his upper jaw was all but edentulous, as he had only two wisdom teeth left. He made some experiments in his own mouth some years ago, with a view to ascertaining whether it was possible to make that desideratum of all patients, a narrow suction plate. He tried a long, narrow curved chamber just inside the palatal surface of the alveolar border. After considerable perseverance he was able to wear it perfectly well, but he found no advantage in it, and he came to the conclusion that patients' notions as to the smallness of the plate is a false one; and further, from previous experience there was no necessity for a suction chamber at all. He might state that he had been something of a victim to suction chambers since, and he had found that there was a gradual and continual enlargement on the palate corresponding to the successive chambers. That enlargement had not increased in his own case since he had found that it was not at all necessary to wear a suction chamber, and that a spur modification of the Fulsome ridge answered perfectly well. In determining the position, the height, and breadth of the ridge, the examination of the mouth should be made with a blunt instrument such as an egg-shaped burnisher, to ascertain the softer and thicker parts of the tissues covering the palate. With regard to suction discs themselves, he thought "Land's" was the best. Dr. Land also recommends the spur arrangement as well, and advises the largest possible disc. Mr. Hepburn had requested some information with regard to suction valves, he (Mr. Cunningham) remembered on one occasion having a very troublesome case. The plate was a very heavy one, and he was anxious to try some discs of soft rubber. He did so, and it was a disastrous failure. He thought suction valves might possibly be of some use for the retention of *temporary* plates where much absorption was anticipated.

Mr. AMOS KIRBY (Bedford) read a Paper upon

ELECTRICAL PROGRESS AND DENTAL PRACTICE,

of which the following is a summary. He regarded electricity as the power of the future, the strong points in its favour being the ease with which it can be transmitted from place to place, and its services be enlisted either for lighting purposes or as a motive force. Three

or four years ago he investigated most of the known types of batteries, and was disappointed to find that they were all subject to drawbacks. He had come to the conclusion that storage cells were best for the purpose of liberating electricity, but having no convenience of getting his storage cells re-charged, he had cast about for some other means of procuring a current for small motors, and after several trials, had adopted Smee's battery. It was a battery which, when once charged, remained in action for a long time. Progress in electrical science during the past few years had mainly been in the direction of improving dynamos, which were the means of converting mechanical into electrical energy. The question whether a continuous current (*i.e.*, a current always in one direction) or an intermittent one, is the more effectual, is still an open one. The best means of distributing the current is likewise undetermined. Although as an illuminant electricity is closely connected with coal gas, so long as the latter can be produced under 5s. per 1,000 feet it need not fear competition. It is owing to the high price of coal in America that electricity is not placed at the same disadvantage there with reference to the various sources of supply of electric currents. Mr. Kirby was of opinion that storage cells are daily coming more into use; they require to be charged from a dynamo. With reference to the use of continuous currents directly from the dynamo, as the current is only obtainable when the machine is at work, and as the Electric Lighting Act prohibits the introduction into a house of a current of a greater pressure than 110 volts, their extensive use required the employment of very large conductors, which created a difficulty in its distribution. This difficulty is now being overcome by a different method of supply. A current of very high potential is generated, and is carried in large quantity through a very small conducting wire; it is then converted into a current of lower potential before being carried into the houses. A current of the alternating kind is used, which is easily converted from a high to a low potential. In some very large works the original E.M.F. is 10,000 volts; this is reduced at the distributing stations to 2,400 volts, and finally to 100 volts. There are two or three objections urged against this method of supply. First, the machinery is apt to be destroyed by overheating; secondly, it is attended with waste and loss; and lastly, the telephone and telegraph wires would be interfered with. The alternate current is applicable to the dental motors in use. Having spoken favourably of a new form of glow-lamp, manufactured by Swan and Edison,

which, Mr. Kirby stated, owes its illuminating intensity to a number of coils of filament which produce a concentrated light, he passed on to the consideration of the electric current as a motor, especially for the burring engine. Certain rules for the construction of motors apply alike to large and small engines, *e.g.*, a certain sized piece of iron should have only a certain number of turns of wire, because if you produce a current beyond the amount required to produce magnetic semi-saturation, a great part of the extra current will be wasted ; for this reason small sized motors are wasteful, and if a battery is employed this becomes important, since the charge is expended with unnecessary rapidity. Mr. Kirby proceeded to describe his experience in making motors for himself. He selected the type first made by Jacobi in the early days of electricity ; he adjusted governors to regulate the speed, and an automatic switch by means of which the motor was put in action immediately the engine-arm was pulled towards the operator. An insufficiency of power, which at first manifested itself was corrected by a modification of the poles. The Jacobi motor was spoken of in the text books as being behind other motors, but Professor Sylvanus Thompson did not endorse that opinion, and those whom Mr. Kirby had consulted as to his modification of the Jacobi, thought that it might be the best plan for small motors. Having compared a motor constructed on the ring armature principle of the Pacinotti type with the Jacobi, he preferred the latter, because it took less current, and although running at a lower speed, developed more power. With reference to the supply of current to small motors, Mr. Kirby thought it must be of the continuous kind, such as that for a primary or secondary battery, or for a continuous current dynamo, and further, its intensity must bear exact proportion to the winding used upon the motor. Mr. Kirby in conclusion, referred to the employment of electricity in the destruction of tumours.

The CHAIRMAN asked whether members would prefer to discuss the paper at once, or would like some description from Mr. Kirby of his apparatus.

Mr. GEORGE BRUNTON said, that it seemed to him that they would be in a better position to discuss the matter after Mr. Kirby had explained his apparatus.

Dr. WALKER also advocated this course.

Mr. KIRBY, in demonstrating the features of the apparatus, said, that the battery was one of the old-fashioned Smee type slightly modified. Its advantage was that when once charged it would go

for a long time. When the motor was not in use, there was little or no waste, and it answered instantly when connection was made. The plates were raised from the fluid in a simple manner, on the same principle that a window is hung in its frame by balancing weights. In order to facilitate charging, he had had a special form of glass measure made with an outer cup to it which caught any drops of acid which might trickle over the sides of the inner cup. He claimed that the whole of the cells might be charged in ten minutes. Each of the cells was made separately. It was preferable to attach the platinized silver plate to an ebonite board. Each plate weighed about one pound. With ordinary usage the battery would last for several months. The current was carried by leading wires to the motor—the size of the leading wire was important; it was impossible to have too large a one. With reference to the motor, his own feeling was about burring engines, that they should work at a slow speed. His motor was made with an internal governor; scientifically that was not the best form for a governor, but the scientific way only admitted of one speed.

Mr. G. BRUNTON (Leeds) expressed his appreciation of the paper. He considered Mr. Kirby's motor came nearest to his idea of what a motor ought to be. He would like to see one so small, so light, and so handy that it might be mounted on the shoulder and made part of oneself.

Mr. BOYD WALLIS said that Mr. Kirby, in his excellent paper, had left little to criticise, nevertheless there were one or two points that he would like to touch upon. He thought it an important point in the make up of a battery to arrange the cells so that their internal resistance should equal the resistance of the circuit, so that the maximum current for a given circuit might be obtained. This was a point nearly always overlooked by amateurs, and sometimes by practical electricians. Ohm's well known law gave the strength of

E.M.F. in volts.

current in ampères = $\frac{\text{total resistance of circuit in ohms}}$. With

regard to transformers, electricians were devoting their energies to the discovery of the best methods of constructing these instruments, and he was informed that it was likely that an instrument would be produced which would make it possible to transform the current in the leads from the powerful mains to one's own house, and use the same with perfect safety. Transformers employed to transform either direct or alternating currents of high E.M.F. (of say 200 volts)

should be placed in a fire and moisture-proof casing. The leads conveying currents of high E.M.F. inside buildings should be specially and perfectly insulated, and with the positive and negative terminals some 12 inches apart.

With reference to the treatment of tumours, which the essayist had touched upon, Mr. Wallis considered it a very important point in the treatment of fibroid growths that the resistance of the patient should be ascertained ; for the resistance of the human body to the passage of the electric current, differs so enormously in different individuals, and, indeed, in the same individual under variations of health, and at different periods of the day, that it would be readily understood that what might prove to be a very big dose of electricity to one individual might prove practically *nil* to another.

Mr. KIRBY thought it was a mistake to say that the external and internal resistance should be the same. As he understood it, it was an advantage to have the external resistance considerably higher than the internal, and the most efficient motor was one that gave the most induced current. By far the most economical way the current is to do so, is with a very high resistance. With regard to transformers with an intermittent current, they are very near perfection ; but it is not so with a continuous current. With reference to tumours, Dr. Parson in the *British Medical Journal* had stated that he commences with a very low power and reads from a galvanometer as he increases it.

The usual votes of thanks having been passed, the meeting adjourned to the 3rd June, when a paper will be read by Dr. Ferrier, F.R.S., on "some Relations of the Fifth Nerve," and *Casual communications* will be made by Messrs. Scott, Thompson, Geo. Cunningham, and Robinson.

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

THE Ordinary General Meeting, held May 13th, Mr. WILLIAM HERN (President), in the chair.

The minutes of the previous meeting were read and confirmed.

The PRESIDENT announced that the Society's Prize for last year's papers was awarded to Mr. Harsant. The Examiners also wished to

express their sense of the excellency of Mr. Dolamore's paper, which was an exceedingly good one.

The following gentlemen were proposed for membership:—Messrs. Hall, Barkley, Gardner, Leigh, Goddard, Allin, Jones, Carter-Braine, and Coysh.

On *Casual Communications* being called for

Mr. HARSANT presented a lower canine with two roots.

Mr. DAVIES showed a dilacerated lower bicuspid.

Mr. HARRISON showed a lower molar, in the pulp chamber of which was part of a pin, which had broken off while the patient was trying to remove some foreign material from a carious cavity in the tooth.

Mr. PORTER exhibited a lower molar, the anterior root of which was bifurcated, the extra pulp canal having caused a good deal of trouble.

Mr. BURTON showed a lower wisdom tooth, in extracting which he had experienced great difficulty, one root having slipped down between the gum and the bone.

Mr. WILLIAM HERN exhibited a model of the lower teeth, showing absence of a permanent incisor on the left side. The interest of the case lay in the fact that the temporary central and lateral had been geminated, and had apparently given off only one permanent successor between them.

Mr. HERN also described an interesting case of chronic spasm of the left masseter muscle in a girl of neurotic tendency. The spasm had yielded to bromide of potassium and rest.

Mr. PREEDY announced that the President had presented to the library of the Society a copy of "Heath's Diseases of the Jaws."

Mr. STANLEY READ read a paper entitled

SYPHILIS: ITS HISTORY AND THE MANNER IN WHICH IT
AFFECTS THE MOUTH.

In the history of this disease he supported the most probable theory, that of its immemorial antiquity, mentioning as evidence, the earliest writers, Sanscrit, Chinese, Greek and Roman. Then for the disease itself he commenced by describing the inoculation and manifestations in the mouth, and said, syphilis is a specific disease resulting from the inoculation of a virus, which multiplies itself in the system until the whole body is infected. It is communicated by direct contact of

the blood, secretions or discharges of a person suffering from this disease, with an abraded surface of a healthy person, and under certain circumstances from the parents to their offspring. It is therefore contagious but not infectious.

The tongue is a favourite seat for the manifestations of this disease, because this organ is so vascular and in constant activity.

The chief syphilitic affections of the tongue may be classified thus :—

I.—Mucous tubercles and vegetations.

II.—Superficial ulcerations.

III.—Gummy tumours and deep ulcerations.

IV.—Morbid conditions of the mucous membrane.

Then, of course, there may be primary sores on the tongue from inoculation. The mucous tubercles are generally found on the sides and beneath the tongue, or on the fold of mucous membrane which is reflected from the tongue to the floor of the mouth.

The superficial ulcers, are either cracks and fissures or wide-spread ulcers with well-defined edges and a hardened base. The gummy tumours, which are generally in the fibrous raphé of the tongue, are cell-growths of a low organisation, they may either be absorbed or break down and discharge a semi-fluid material. When they are absorbed, the surface of the tongue often sinks down and forms a depression where they have been, but when they discharge, if treated constitutionally, will generally get well, but if not, they become a deep and foul excavation.

The simplest of the morbid conditions of the mucous membrane is *psoriasis linguæ*, which is like what is met with in syphilitic psoriasis, only modified by the secretions and action of the fluids of the mouth.

There is also a very extensive disease called Superficial Chronic Glossitis ; the French call it “Plaques Muqueuses” ; it consists of dark red coloured oval ulcers, denuded of epithelium ; when healed by specific treatment, they leave smooth shining cicatrices which, by contraction, cause the tongue to become small and mis-shapen. A very important thing in the paper was the

differential diagnosis of cancer and syphilitic ulcers on the tongue, viz. :—

CANCER.	SYPHILITIC ULCER.
Generally over 40.	Generally under 40.
At one side and middle, or posterior third.	Frequently in central line.
<i>Shape</i> —Circular.	<i>Shape</i> —Oval or oblong.
<i>Pain</i> —Acute and darting.	<i>Pain</i> —Slight, or none at all.
<i>Ulceration</i> —Secondary, <i>i.e.</i> , induration becomes ulcerated.	<i>Ulceration</i> —Primary, <i>i.e.</i> , ulcer becomes indurated.
<i>Speech</i> —Thick and indistinct, because tongue is tied down and immovable.	<i>Speech</i> —Distinct and easy, tongue free and movable.
Increases steadily, sometimes rapidly, often sloughs.	Increases steadily or not at all, but never sloughs.
No amendment under treatment.	Amends under treatment.
Family history of cancer.	Syphilitic history and symptoms.
Bones of jaw palate and nasal passages often necrose after deep ulceration in case of palate forms cleft palate.	

Syphilis may cause a disease of any of the nerves.

He also explained Moon's theory of syphilitic notched teeth.

He mentioned the various combinations of mercury and iodide of potassium and the modes of giving them, namely, by the mouth, inunction, vaporization of calomel, and hypodermic injection. Mercury being the best for the primary and secondary stages and potassium iodide for late secondaries and the tertiary stage.

The paper was illustrated by drawings of cleft palates, ulcerated tongues and notched teeth.

Mr. J. P. SMITH opened the discussion by mentioning the case of a patient who was inoculated on the lip with the syphilitic virus, through drinking from a contaminated glass. He pointed out that clearly such cases showed the need of thoroughly cleansing all instruments. He mentioned the occurrence of cancer as a sequel, or even concomitant of syphilis, and referred to the difficulty of differential diagnosis. He did not regard the treatment of syphilis as being at all within the province of dental surgeons.

Mr. WOOLF reminded those present of a case given in Tomes' "Surgery," where a sailor had inoculated twenty-five persons with syphilitic virus, by moistening the needle with which he was tattooing them with his saliva.

Mr. DOLAMORE stated that, though it was possible syphilis might often have been erroneously called "leprosy" in ancient times, yet the duality of the two diseases was amply proved by existing cases. As showing the wonderful action of iodide of potassium in the tertiary stage, he mentioned a case where perforation of the soft palate, about three-eighths of an inch in diameter, was quite healed in two weeks by the exhibition of this drug.

Mr. PORTER, referring to cancerous ulcers in the mouth, remarked that he had not generally found them round in shape, and that he had found them indurated. He should like to ask Mr. Read whether the disease of the nerves of the brain to which he had referred was due to gummata forming in the coats of the nerves, or to specific nerve lesions.

Mr. J. F. COLYER referred to the exceeding virulence of syphilis when newly introduced into a community. He believed it was more accurate to speak of the early and late manifestations of syphilis rather than to seek to divide its progress into the hard and fast primary, secondary, and tertiary stages. He especially drew attention to the briny odour of the breath of syphilitic patients, a point which, he said, had been first brought to his notice by our late Vice-President, Mr. Herbert Williams. The odour was in no way due to mercury, since the cases in which he had met it, had not been treated with that drug.

Mr. RILLOT agreed with what Mr. Smith said about the difficulty of diagnosing syphilis from cancer. It was frequently the case that they existed together or that the latter was a sequel of the former. This was especially likely in cases of leucoplakia of the tongue, so that great care should be taken in treating patients suffering from this affection that no source of irritation should be left in the mouth. With regard to the painlessness of syphilitic lesions, he thought that was the reason why patients neglected to come for treatment till the disease had advanced so far. Were the ulcer painful, cases of perforation of the palate would be rarer. He reminded his auditors that patients almost invariably denied the real cause of the lesion, and attributed it to some imaginary cause, or contemporaneous accident. He thought that the subject of treatment was beyond the province of the dental surgeon.

Mr. BALDWIN could not agree with Mr. Rilot. He thought that the treatment was a most important point, and a knowledge of it

necessary. He characterised the smell of patients' breath as not only briny but foetid.

Mr. HERN was glad Mr. Smith had reminded members of the great necessity for thoroughly cleansing instruments after use, especially forceps, for though it was a disputed point as to whether syphilitic saliva was virulent, there was no doubt that a drop of blood could communicate the disease. He agreed with Mr. Rilot's remark with regard to the care that should be taken not to cause any irritation in the mouths of patients suffering from ichthyosis of the tongue. He mentioned that stomatitic or honeycombed teeth, were considered by Mr. Hutchinson to be the result of the exhibition of mercury in early life.

Mr. READ then replied to the various speakers.

After the usual vote of thanks the meeting closed with the announcement that the next paper was by Mr. Oliver, on October 14th, the subject being "Anæsthetics."

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

THE last ordinary monthly meeting of this Society was held on Friday, May 3rd. Mr. SIDNEY SPOKES (President), in the chair.

The minutes of the previous meeting were read by the secretary, and confirmed.

Miss Day was elected a member of the Society.

Casual Communications.—Mr. CLARK showed a model of a left upper first bicuspid root, in which the nerve was still alive and aching. As patient objected to having it destroyed by taking gas and killing it with a barb, Mr. Clark fitted a German silver collar round the root, and applied Baldock's paste. The treatment was successful.

Mr. T. G. READ mentioned a similar case.

Mr. FISK showed a curious left lower wisdom tooth which had seven cusps, one of which was more than $\frac{1}{8}$ inch in height, and was curved backwards like the horn of a rhinoceros.

Mr. FISK also mentioned the case of a patient who complained of partial loss of sensation on left side of tongue and gums. One tooth only, a molar, was or had been standing on this side, but the crown had been broken off by another dentist. Mr. Fisk removed the roots, and sensation returned within five minutes. Roots showed slight absorption, and the apical foramina were exceedingly large.

The PRESIDENT then called upon Mr. ALLNUTT for his paper on "Anæsthetics," the following being an epitome of the principal points touched upon. After mentioning several means employed by the ancients for the prevention or alleviation of pain, he proceeded to trace the history of nitrous oxide, ether and chloroform. He then dealt with the physiological effects and mode of administration of N_2O ; mentioning the several phenomena, and the symptoms of true anæsthesia. He then dwelt on the dangers incidental to the administration, especially syncope and asphyxia, giving the symptoms of each, and the different modes of treatment.

A discussion on the paper then took place, in which Messrs. HUMBY, T. G. READ, FISK, CLARK and the PRESIDENT took part. After which, Mr. ALLNUTT replied to the various gentlemen, and a hearty vote of thanks was accorded to him.

The meeting then adjourned till Friday, June 7th, when Mr. FISK will read a paper on "Dental Education."

ARNOLD PRAGER, *Hon. Sec.*

IMPORTANT PROSECUTION UNDER THE DENTISTS' ACT.

Halifax Borough Court, April 16th and 25th, 1889, before Alderman RICHARD HORSFALL and JOHN HALL, Esqs.

We have received the following special account for publication.

April 16th.

ARTHUR LEOPOLD JACKSON, of 4, Aked's Road, Halifax, was charged—"That he during the months of March and April, 1889, at Halifax, in the borough aforesaid, not being a legally qualified medical practitioner, and not being registered under the Dentists' Act, 1878, did take and use the name and title, addition or description of Dentist, or addition or description implying that he was registered under the said Act, or that he was a person specially qualified to practise dentistry contrary to the form of the statute in such case made and provided."

Mr. CHRISTOPHER T. RHODES, solicitor, Halifax, appeared for the prosecutor, Mr. WILLIAM WILLIS, L.D.S.I., Halifax. The defendant was represented by Mr. WAUGH, barrister, instructed by Mr. J. R. FARRAR, solicitor, Halifax.

Mr. RHODES produced the register and read the sections of the

Act, and explained the facts of the case at some length, urging that the case was an important one to the profession, and that the circumstances were peculiar, and such as to aggravate the offence. The defendant was apprenticed to Mr. Willis (the prosecutor) in April, 1886, and there was a covenant in his indentures that he was not to practise within five miles of Halifax after he was properly qualified, without the permission of Mr. Willis. Defendant was about 19 years of age when the indentures were executed, and the law provided that an infant might either repudiate or confirm a contract which he had entered into for his own benefit, on his coming of age. The defendant had chosen to repudiate his honourable agreement. Soon after the defendant came of age, about March, 1888, he began to absent himself frequently from complainant's service, and eventually disagreements resulted and the indentures were broken. The CHAIRMAN asked Mr. Rhodes to keep to the charge. Mr. RHODES replied that the case was simple enough on the face of it, but he was entitled to show that the defendant had broken the law deliberately, and to ask for a substantial penalty rather than one of a nominal amount, as where a person had offended innocently. Some correspondence had taken place between Mr. Willis and Mr. Farrar, wherein Mr. Farrar had stated in reply to Mr. Willis's demand that the defendant should return to his duties, that he, the defendant, "had made other arrangements." It was soon seen what these "other arrangements" were, as the defendant had now set up business in Aked's Road, Halifax, as a dental surgeon, and in a circular which he had issued to Mr. Willis's patients and others, he stated "he had opened a dental surgery," and "steam laboratory, where teeth were carefully extracted, nitrous oxide gas administered, filing, scaling, and all other dental operations were performed daily under his own supervision, &c." He had also a large brass plate fixed on the wall outside his premises, bearing the words—

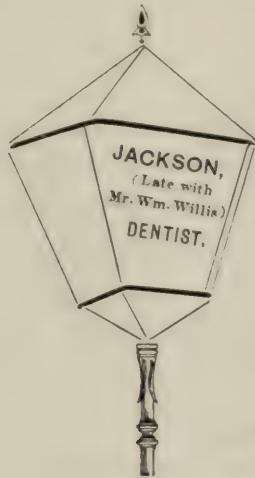
MR. ARTHUR L. JACKSON,

(Late with Mr. Wm. Willis,

DENTAL SURGEON).

NITROUS OXIDE GAS ADMINISTERED DAILY.

Besides this he had an elaborate lamp with colored glass, on the top of a massive pillar announcing that he was



and he had issued cards bearing the words :—

Mr. A. L. JACKSON,
late with Mr. Wm. Willis, L.D.S.I.
 DENTAL SURGEON, &C.

4, Aked's Road,
 Kingcross Lane,
 Halifax.

It would be seen from the photograph of the brass plate and a sketch of the lamp (which would be proved), that the words "Jackson" and "Dental Surgeon" were very large, whilst the words "late with Mr. Willis" was very small, and it was difficult to imagine what the defendant meant to imply by these words and signs, if he did not mean to imply that he was a person properly qualified to practise dentistry. The signs were calculated to mislead the public, and it was in the public interest as well as in the interest of himself and the profession generally, that the complainant, Mr. Willis, had come boldly forward to prosecute the defendant without invoking the aid of a common informer. It was a dangerous proceeding in many cases for a fully qualified practitioner to administer nitrous oxide gas, yet the defendant unblushingly advertised that he administered nitrous oxide gas daily. He not only implied in every way he could that he was properly qualified but he actually practised as a dentist, and though he was not charged with practising, he had given on one of his memorandums, signed by himself, a receipt for 2s. 6d. for "professional services" for scaling teeth.

The CHAIRMAN : Confine yourself to the charge.

Mr. RHODES continued that he was confining himself to the charge, for on this very document were the words :—

4, Aked's Road,
Halifax.
10th April, 1889.

Mr. B. R. MOTLEY, Sowerby Bridge.

Dr. to ARTHUR L. JACKSON,
(late with Mr. Wm. Willis,

TERMS: 2½% MONTHLY.

Dental Surgeon).

NITROUS OXIDE GAS.

					s.	d.
Professional Services, Scaling	...	...	...	...	2	6
Tooth Powder	...	...	...	...	1	0
					<hr/>	<hr/>
					3	6

Recd. with thanks,

10th April, 1889.

A. L. JACKSON.

The document was a very important one in the case, as showing the defendant's representations, for although a blacksmith might extract teeth, and practise dentistry if people chose to go to him without infringing the Act, he must not hold himself out as a dentist, and thereby deceive the public, in whose interest the Act had been passed. The defendant's conduct throughout had shown a deliberate intention to defy not only Mr. Willis, the British Dental Association, and the dentists in town, but the law itself, and on this account it was necessary to go more into detail, that the bench might consider whether the case was one for a substantial penalty or merely one of a nominal amount only.

The CHAIRMAN said he had an appointment at 1.30, and the case would have to be adjourned

Mr. WAUGH objected.

Mr. RHODES said he was sorry the chairman had to leave, but he had a duty to perform to his clients, and he could not consent to have the charge only half heard on that account, but he would submit to adjournment, when probably the complainant might be also represented by counsel. After a further protest by Mr. Waugh, this was agreed to, and a special day was fixed for the hearing.

Thursday, 25th April, 1889.

Before the same Justices.

The case was resumed this morning, when Mr. WALTER

BEVERLEY, Barrister, Bradford (instructed by Mr. Christopher T. Rhodes, Solicitor, Halifax), now appeared for the prosecution, and Mr. WAUGH (instructed by Mr. J. R. Farrar, Solicitor, Halifax), for the defence.

Mr. BEVERLEY applied to be allowed to shortly open the case, which had been partly opened by Mr. Rhodes on the 16th.

This was objected to by Mr. WAUGH, but the Justices allowed Mr. Beverley to proceed, and after stating the main facts, Mr. Beverley said Mr. Waugh might argue that the words "dental surgeon" applied to Mr. Willis; but if those words were not to be used for the benefit of the defendant, for whose benefit were they used? It was quite clear what his object was. The effect of the words was what they had to arrive at, and he (Mr. Beverley) could show most conclusively that it was to mislead the public. Since the proceedings had been taken, the defendant had practically pleaded guilty. Upon advice he had caused the sign and lamp outside the house to be removed. Nevertheless there were circulars and cards issued. Mr. Beverley concluded by asking when he had finished his case, for the Bench to inflict a substantial penalty.

The complainant, Wm. WILLIS, L.D.S.I., Ward's End, Halifax, was then called. He said the defendant was apprenticed to him in March, 1886, and he finally left his employ on the 12th November, 1888. Since February last, the defendant had been conducting the practice of a dentist. Witness produced a copy of the latest register of legally qualified dentists, in which the defendant's name did not appear. He further stated that in passing or running past Mr. Jackson's house, he could read a portion of the sign.

BENJAMIN ROWLAND MOTLEY, brassfounder, Sowerby Bridge, produced a receipt made out to him on one of his forms by Mr. Jackson, for "professional services."

ALBERT WARHURST, one of Mr. Rhodes's clerks, produced a sketch of the brass plate, lamp, and front of Mr. Jackson's house made by him on the 11th March (*here the brass plate exhibited in front of Mr. Jackson's house was produced*), and in cross-examination witness said he would swear that when he made the sketch the brackets were before the words "late," and after "Willis"; and not as it now stood, before "late," and after "surgeon."

FRED RAWNSLEY spoke to a photograph taken by him of Mr. Jackson's house and brass plate on the 9th April.

Further evidence was given by Mr. ARTHUR WOLFENDEN,

Dental Surgeon, Rhodes Street, Halifax, and Mr. ARTHUR COCKER, Dental Surgeon, Halifax, as to nitrous oxide gas being used by dentists, and as to seeing defendant's sign, &c.; also by Miss BUCKLEY, a patient of Mr. Willis's, who had received one of defendant's circulars by post.

Mr. WAUGH in defence, argued that no offence had been proved within the meaning of the Act. There was no evidence that the defendant was not a legally qualified medical practitioner.

Mr. BEVERLEY said that he had complied with the provisions of the Dentists' Registration Act, and shown that the defendant's name did not appear on the Dentists' Register. It was not for him to prove a negative. It was for Mr. Waugh to prove that the defendant was a medical man if he could, and so come within the exemption, for although he could not be called, he could call witnesses or produce a Medical Register, and show that he was a medical man.

The Bench were of opinion that the complainant had proved his case so far.

Mr. WAUGH then argued at some length that the words "Dental Surgeon" were applied to Mr. Willis, and not to the defendant. If they had applied to his client the wording would have been "Jackson, Dental Surgeon, late with Mr. Willis." In every case, a sign, circular, card or receipt, the words "late with Mr. Willis, Dental Surgeon" were in brackets.

The Bench retired for a few minutes, and on returning, the Chairman said they were agreed that the complainant had made out his case. They had decided to inflict a penalty of £5 and the Court expenses, or one month's imprisonment in default of payment.

Mr. WAUGH asked the magistrates to state a case, which was granted.

EXTRACTS.

ANNEALING GOLD.

By Dr. W. C. BARRETT.

PROF. BLACK's reference to the earnest discussion of this subject, which followed the introduction of cohesive gold, brought to my mind a flood-tide of memories of that period. We were then very anxious to know what were the secrets of the manufacturers of foil, and what gave a distinctive character to the products of certain beaters. In the course of my own investigations, I spent some days

in one of the largest manufactories in the United States. Every facility was afforded me, yet I came away very little wiser than when I went there. One thing I learned, and that was that pure gold, fresh from either the refiner's crucible or the beater's hammer, was cohesive at ordinary temperatures. Pure ingots would cohere, as would the sheets of pure, clean foil, and I became satisfied that the so-called non-cohesive foil owed its character to some extrinsic quality. But Dr. Black's experience and reasoning concerning the condensation of foreign substances upon the surface of foil covers that ground so completely, that there is no necessity for my making further allusions to it.

The proper annealing of foil, it seems to me, however, involves yet another principle. We know that heat is the antithesis of cohesion—it destroys it. To ensure the perfect union of two pieces of gold, it is only essential that the heat be sufficient to make them entirely fluid, breaking up the crystallization, when they immediately unite spontaneously, and re-crystallize into a homogeneous mass. A gentle heat causes the expansion of metals—that is, a partial separation, a driving asunder of their constituent crystals, in which condition two such bodies are more easily forced into a permanent coherence with each other, through an interlacing and interlocking of their granules by means of a sudden impact, as from the blow of a hammer. Witness the blacksmith's welding of iron or steel. Of course it must be premised that every intervening foreign substance has been removed, and to facilitate this a flux is sometimes necessary, which will unite with the extraneous matter and thus eliminate it.

We know that if foil be left for a time after annealing, it again becomes partially non-cohesive. I believe that this is not wholly due to fresh condensation upon its surface, but that in addition to this the particles resume their former close relation with each other and hence do not so readily enter into relation with those of another body of the same metal. The readiness with which pieces of pure and clean gold unite depends somewhat upon the extent to which cohesion of the particles has been destroyed, and the nearer we come to complete fusion the more readily is perfect union attained. But this readiness to unite when heated is not instantly lost upon cooling. It takes a little time for the crystals to settle back into their exact former relationship, and hence it is not essential that the mass of a gold filling and the piece to be added should be kept at a high

temperature, which would, of course, be impracticable. It is sufficient that they be united very soon after the heating.

A very high temperature, my own experience teaches me, is not necessary for the reduction of gold to a condition which is sufficiently favourable for the ready welding of small pieces together. Perhaps it might be desirable, were it not the fact that this involves the production of other conditions which are inimical to the desired end.

In the first place, if a number of layers of foil in contact, or close proximity, as in pellets or rope, are heated to a cherry red, the mere handling of them with the plyers in annealing and carrying to place causes a premature cohesion, thus forming a thick, hard, partially welded mass, which is intractable under the instrument, and is liable to "bridge over," thus preventing a perfect union with the mass which has already been condensed. Such a piece is harsh and stiff, unyielding and impliable. It may unite with the body of the filling at the edges, but it is not thoroughly coherent, and it will be likely to flake off when sufficient force is exerted by subsequent malleting or practical use to break away the slight attachment at the periphery of the piece.

2nd. It is almost impossible when layers of thin foil are passed through a flame to avoid curling and melting of the exposed single films and corners. This will be fatal to a perfect union, for the minute lumps thus formed can not be so manipulated as to condense thoroughly. The irregular masses will not be brought into such intimate relation of the particles as to favour their perfect cohesion under the necessarily light blows of the mallet upon a tooth. If enough of force were employed, it would be likely to shatter frail walls, besides proving intolerable to the patient.

3rd. I have found it impracticable to perfectly anneal a piece of foil held in the plyers, because as Dr. Black says, that part between the points will be left unannealed.

4th. I believe that the best results are obtained when all the foil of which a filling is to be composed is subjected to the same degree of heat, and is therefore alike in condition. If one part of a pellet is raised to a higher temperature than the rest, the two parts are unlike; the conditions are variant, and the results will not be uniform. One portion is over and the other underheated. As metallurgists, we all know the desirability of a definite, even and steady temperature in the manipulation of metals.

5th. Those who have had any experience in working gold are

aware that two pieces of gold—coins for instance—may possess widely different physical characteristics. The one will be soft, ductile and readily swaged into any shape. The other will be harsh, unyielding and brittle. I have found that two batches of foil, beaten by the same hand, will be more or less unlike, and require quite different handling. Both may be capable of producing excellent effects if intelligently manipulated. But while the one makes the best filling when annealed at a low temperature and condensed with many light blows of the mallet, the other requires a high annealing point and harder pounding.

6th. My experience has led me to the conclusion that slow annealing produces better effects than when the temperature is suddenly raised. As gold after heating slowly returns to its original condition, it seems to me evident that the change which we desire to produce should be a gradual one. Violent and abrupt transitions from one state to another are not favourable to delicate manipulations.

7th. The passing of foil through a flame I believe is likely, in some cases, to lead to the very end which we most wish to avoid—its contamination. Whatever may be the source of the flame, there will be certain products of combustion, which will be deposited upon or mingled among the layers of the foil. The alcohol flame is doubtless most free from these, but even that is not wholly so. If a gas jet is employed, even though a Bunsen burner be used, considerable carbon is unavoidable, while there is always sufficient floating matter in the air to contaminate any flame. A close inspection will show a constantly varying colour, due to the combustion of different floating matter.

8th. I am satisfied that the annealing of gold at a high temperature, while held between steel plyers softened by repeated heatings, will result in the mingling with the gold of sufficient iron, burned off from the points, to materially affect the working qualities of the foil in some cases. I am not at all sure but that some, at least, of the mysterious blackening of gold fillings in the mouth, of which many have complained, is due to this burning of the iron into the foil.

Do you say that some of these are but matters of trifling import, and not likely to seriously mar effects? Perhaps this may be so in the majority of cases, but under favoring circumstances a trifling error may materially modify results. Besides, I have found that one great difference between a skilful man and a bungler is, that the

former carefully attends to all the minutiae, and the sum of these little things is a complete product.

In view of all this, I long ago adopted a method of handling gold foil which has proved eminently satisfactory to me. Perhaps this article will be incomplete if I do not state it, even at the risk of prolixity.

In the first place, by an arrangement with the manufacturer, a batch of foil is beaten out specially for me, and my order is never for less than a quarter of a pound. When the foil arrives it is tested, and if I find it to my liking I usually secure the rest of the batch, if there be more, at once, even though it involves the outlay of considerable money. I thus have a stock on hand of uniform quality, sufficient to last me for a time, and am not obliged to vary my annealing. Foil will deteriorate with time, by surface condensation probably, but by keeping it in a dry place, carefully shut up, and by avoiding atmospheric changes, this is reduced to a minimum. My foil is kept in the original packages in my office safe, and that is never allowed to remain entirely shut long enough to gather moisture.

My apparatus for annealing consists of a tray of the finest thin sheet steel, with symmetrical indentations for holding the pellets, so that they may not come in contact with each other. Probably mica would be better for the tray, and, indeed, I have used it, but it burns out after awhile, and, besides, it cannot be indented like the steel or iron sheet, and the pellets get in contact and cohere, thus causing trouble; I have, therefore, for a long time used only the iron tray. Beneath this tray is a small Bunsen burner, to which it is attached, the tube not quite as large as that of a common gas burner. The relative supply of gas and air to this is so arranged that the flame can be turned down to the smallest point. The flame which I ordinarily employ is not more than an inch high, and proportionally small, while the combustion is so nearly perfect that it is difficult to tell by sight whether or not it is lighted. It gives me an average temperature for annealing of about 700 degrees F. Some foils will anneal sufficiently at 600, while others require 800. Gold at a cherry-red heat is about 2,000 degrees F.

The annealing tray and burner are permanently attached to the axis of my particular operating table by a revolving gas-bearing arm, which supports the tray at its extremity. I can thus bring my annealing apparatus quite near the patient while operating, and

swing it to the opposite side of the table when no longer wanted. At the commencement of an operation the office girl fills the tray with pellets of the size which I indicate, but the gas is not yet lighted. The base of the filling and the larger part of its body, unless it be the restoration of contour, is completed before lighting the gas, because I can secure better adaptation to the walls with unannealed foil. But when I get in the neighbourhood of the masticating surface, or that which is exposed to attrition, and which, therefore, demands a harder finish, or when I begin any contour work, the gas is lighted, and while the gold is gradually heating I continue the operation, thus obtaining a gradual transition from soft to annealed foil.

I find many advantages in this method of handling gold which, aside from its greater convenience, are chiefly summed up in the avoidance of the objections to the open flame urged in the preceding paragraphs. It is astonishing how small a flame will answer every demand when the temperature is steadily and equally maintained. Of course gold of different characteristics will require different temperatures, but upon the receipt of a batch of foil it is carefully tested to see what degree of heat produces the best results, and the flame is, by a separate stop-cock, carefully adjusted, so that whenever it is turned on and lighted I always get the same heat, until a different quality of foil demands a readjustment of the flame. If any careful observer will try this method he will be astonished at the sensitiveness of his gold to even a slight change in the temperature at which it is annealed, and I believe it will suggest to his mind some new thoughts concerning the filling of teeth with gold.—*Dental Review.*

CASE OF SALIVARY CALCULUS: REMOVAL

THE following case is reported by Dr. Parry in the *British Medical Journal*:—A man, aged 60, called one day on account of a swelling in his mouth, which was slowly increasing and giving him much pain during mastication. On examining his mouth, a rounded tumour was seen to the left of the frænum linguæ, occupying the floor of the mouth, hard in consistence, and painful on pressure. It had not the appearance generally presented by a ranula and was firmer, and pressure upon it gave much pain. Wharton's duct was

patent, and into this a fine probe was introduced, which directly impinged upon some hard substance. This gave a clue to the diagnosis. The duct was slit open and a piece of calculus scooped out. In doing so another calculus was detected further back, which was similarly removed. Both calculi were lying in a dilated pouch with much granular *débris* ; the latter was washed out, and the walls of the pouch touched up with some tincture of iodine. The man was told to present himself in a week's time, but this he failed to do, so that he probably required no further surgical treatment.

The calculi, which I have before me, weigh together nine grains ; the larger one closely resembles in shape the one pictured by Mr. Birch, and weighs a little over five grains ; the other is more rounded and weighs between three and four grains ; originally they were probably parts of the same calculus.

The man had suffered from the swelling for over five years. At times it was very painful and swollen, then becoming less so, and giving him less inconvenience. He did not complain of any dryness of the mouth, which is easily accounted for by the patency of the duct allowing some saliva to pass along the tube to the mouth.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from April 1st to April 30th, 1889 :—

					London.	National 1840	Victoria. 900
Number of Patients attended ...					—	—	—
Extractions	{ Children under 14	...	...	...	398	248	625
	{ Adults ...	...	...	...	959	399	
	{ Under Nitrous Oxide	...	...	...	1044	831	92
Gold Stoppings ...					274	132	37
Other Stoppings...					710	379	48
Advice ...					54	364	—
Irregularities of the Teeth					81	65	—
Miscellaneous and Dressings					279	122	231
Total ...					3,799	2,940	1 033

THE DENTAL RECORD, LONDON: JUNE 1, 1889.

DENTAL HOSPITALS.

THE inauguration of a new dental hospital and school at Guy's serves once more to remind us how very inadequately the present dental charities of London—even with the assistance of the new addition—are able to cope with the immense amount of suffering which exists amongst the poor of this great metropolis. The services of the forceps must, of sheer necessity, be the principal means of stemming the current of suffering; and were it not for the dental departments of our general hospitals and dispensaries, the condition of the poor—as regards aching teeth and their concomitant misery—would be indeed hopeless. The importance of proper attention to the teeth is, even now, only grasped by a very small proportion of the well-to-do public; and if this be so, what shall we say of the poor, who in their life struggle have scarcely the time—and certainly not the means—of paying due attention to their teeth? What could three dental hospitals do to meet the requirements, were the poor of London suddenly to awake to the fact that their teeth were of vital importance to their health? We do not for a moment wish to minimise the good work done at our hospitals, but the fact remains that there is a vast field for developement in this special department of charity, and in years to come we feel sure that the multiplication of dental hospitals will become a matter of necessity.

If the ministrations of operative dentistry are inadequate, the problem of supplying the poor with artificial substitutes is still more perplexing. We have charitable organizations for supplying the necessitous with every appliance *except* artificial teeth, although we must be fully aware that the misery of dyspepsia—often leading to total loss of health—can in many cases only be combated by supplying the mechanical means of mastication. At present the class of

people to whom we refer are at the mercy of those who put in "guinea jaws;" but too often the unfortunate individual is quite unable even to afford the guinea, were it possible for him to obtain what he requires for that small sum. We are fully aware of the immense difficulty of organizing a system of mechanical relief, but that does not lessen the necessity which exists, and in the future we feel sure that the accumulated wisdom of our dental authorities will devise means by which this most useful class of work may be carried out at our dental hospitals, to the great benefit of the suffering poor, and also to our students who, under existing circumstances, are often unable to complete their education in this important branch of dentistry.

The Dental Examination. The correspondence which has taken place in our pages testifies to the interest which is very properly evinced in this subject. From the general tenour of our correspondents' letters, it would appear that the Examination for the English licence is carried on both competently and fairly, and it is gratifying to find that those who have visited the examinations are, if anything, in sympathy with the examiners. The fact that visitors are cordially received speaks much for the fairness of the Examination, and we feel sure that an occasional inspection can be productive of nothing but good. As pointed out by one of our correspondents, it would be very undesirable that the room should be crowded with visitors—in the interest of all; indeed, none but those engaged in teaching ought to feel that they have any *locus standi* except under very exceptional circumstances.

REVIEW.

A HANDBOOK OF DENTAL PATHOLOGY FOR STUDENTS AND PRACTITIONERS. By ALBERT N. BLODGETT, M.D. (Late Professor of Pathology in Boston Dental College). Philadelphia: Blakiston, Son & Co. 1889.

WE are sorry that we can find but little to praise in this book; it is so badly written that it is quite an infliction to have to read it, and indeed it would furnish a quite inexhaustible mine of wealth to a School Board examiner who was in want of sentences containing

perverse and ingenious examples of grammatical error and of faults of punctuation to set for correction in his papers.

But apart from its literary faults, and the carelessness with which the proofs appear to have been corrected (after long study of one passage in the hope of arriving at its meaning, we found that the substitution of the word "neuralgia" for "necrosis" would make it into sense), out of three hundred pages the first sixty are devoted to dental anatomy of an elementary kind, illustrated with figures which are for the most part old staggers, both in this country and in America; and not content with this, after a brief digression into the field of pathology, at page 100 comes a chapter upon the development of the teeth, also embellished with familiar illustrations.

The arrangement and sequence of subjects is carried out throughout the book in the same bewildering way; thus at page 137 begins a chapter headed "Inflammatory Affections," next comes "Gangrene of the Pulp," then "Alveolar Inflammation," then "Caries," and then "Neuroses of the Teeth and Face." After this the author suddenly reverts to "Inflammation," this time treated in a general manner, and followed by a chapter somewhat curiously entitled "Inflammation of Hard Structures and of the Teeth."

As an example of the writer's style, we extract, almost at random, two passages—

" . . . the tooth. All through its vascular portion there is found an abundant distribution of sensitive nerve fibres, accompanying every connective tissue filament, and like it, being only barely accommodated in its dentinal sheath."

"It occasionally happens that *the* tooth, particularly *an* incisor, is turned upon its axis, so that *the* edge instead of the broad surface is presented towards the lip, and *the other* edge is presented to the oral cavity. The tooth then is found with its surfaces transverse to the direction of the alveolar process."

Although we cannot recommend the book, it contains a record of a remarkable case of arrested development of the lower jaw, in which the chin was quite absent, there being an even slope backwards from the upper lip to the hyoid bone. The mouth would hardly open at all, and pronunciation was very defective.

Such lower teeth as there were, were small, misplaced and misshapen, and the whole lower jaw with its teeth would, but for the bulk of the tongue, &c., have passed entirely within the upper teeth.

The body generally was well nourished, but it is quaintly observed that "the appearance of the genital apparatus is that of complete *apathy*."

GOSSIP.

At a recent examination for the "Pereira Prize" at the Charing Cross Hospital, it was found that two of the students, viz., Mr. T. E. Constant and Mr. A. Hopewell Smith, were both deemed worthy of the award. The successful prizemen are House Surgeons at the Dental Hospital of London, and it is particularly gratifying to find that dental students now and again snatch the "plums" at our general hospitals.

THE *coversazione* on the 12th of June at the Royal College of Surgeons is likely to prove a very brilliant affair. As this is the first time that Licentiates in Dental Surgery have received invitations to these social gatherings, we trust they will turn up in force, so that our specialty may be adequately represented.

THE annual distribution of prizes at the Dental Hospital of London takes place on July 17th, when Lord Kinnaird is expected to preside. Though we may expect to have a good many dental morals inculcated, and seriously gauge the professional abilities of our dental students, the lighter form of entertainment (we do not refer to *refreshments*) is not to be forgotten, for the newly-fledged musical society is to provide what promises to be a very interesting programme.

THE Dental department at Guy's Hospital has, we believe, been successfully floated. On another page will be found a list of the new staff.

THE subject of phosphorus necrosis is one of peculiar interest to dentists. We learn from the *British Medical Journal* that at a recent meeting of the Académie de Médecine M. Magitot read a paper on this disease. From sixty-five cases which he has observed in France and abroad, M. Magitot concludes that the affection is produced by the phosphorus introduced into a special form

of caries, which he terms penetrating caries. The prophylactic measures consist in thoroughly ventilating and isolating phosphorus factories, and in suppressing or neutralising the phosphorescent atmosphere. No persons of defective constitution should be allowed to enter the factories, more especially when the mouth is affected. If these measures be rigorously observed all danger of phosphorus necrosis will be averted.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

THE DENTAL EXAMINATION.

To the Editor of the DENTAL RECORD.

Sir,—Your correspondent “M.R.C.S., L.D.S.,” complains that nobody except a F.R.C.S. is allowed to enter the examination room for the purpose of inspection, and he seems to draw the inference that the examination may be, therefore, unfair or incompetent. I object to both the statement and the inference, but it is only necessary to deal with the former.

At the last examination, at least two of the visitors present at the *viva voce* were not Fellows of the College. Both have been helping to prepare candidates for some time past, and they were readily accorded permission to listen to the questions put at any of the tables. It was of much advantage that they should be able to attend, not with the idea that the examination would otherwise be conducted differently, but for the possible good of future candidates.

Whether it would be beneficial either to examiners or candidates that an unlimited number of members should be allowed to overcrowd the room, is a question I will leave your correspondent to answer as he likes.

Your space will prevent my giving the information about the examination your correspondent is so anxious to have; but, perhaps, you will allow me to state the general impression left upon my mind. I entered the room almost impartial, but with a slight bias in favour of the candidates. I found afterwards that my sympathies were on the side of the examiners. Some of the former must certainly be classified with the Hyrax, or Biblical Coney—a feeble folk. The *viva voce* examination for the L.D.S. is thoroughly straightforward

and practical, and the questions are put in the best possible spirit. What will your correspondent say when I assure him that before now a L.D.S., without the membership, has been allowed to be present?

Finally, I may say, I am personally unknown to any of the Examiners.

I am, &c.,

LONDON, *May 9th*, 1889.

S. S.

To the Editor of the DENTAL RECORD.

SIR,—Your correspondent "M.R.C.S., L.D.S." is apparently under a complete misapprehension as to the admission of visitors to the *viva voce* and to the practical part of the examination for the L.D.S. The fact is, that there is a standing general permission for Fellows of the College, and for all others who are engaged in teaching, to be present, and besides those who have this claim to hear the examination, others have on several occasions, at all events, been present.

Judging from the spirit in which these matters are administered, I should be very much surprised to hear that any M.R.C.S., or any L.D.S., had met with the smallest difficulty in hearing the examination. There is every desire upon the part of the authorities that all examinations should be as public as they can be without inconvenience in their conduct.

I am, &c.,

Another M.R.C.S., L.D.S.

To the Editor of the DENTAL RECORD.

SIR,—In answer to the letter in your last issue on the above subject, I should like to point out to the writer that he is quite wrong in stating "nobody is permitted to visit the examinations at the Royal College of Surgeons except the full-fledged F.R.C.S.; and as he is a *rara avis* amongst dentists, it follows that we hear very little about the *viva voce* questions asked the aspiring L.D.S." I, unfortunately, do not possess the F.R.C.S., but whenever I have presented my card, and asked for admission to the L.D.S. examination, I have never been refused, and have always been treated with the greatest courtesy, both by the Examiners and the Secretary, Mr. Hallett.

The letter seems to hint that the examination is not a fair one; I can only say this, I think it a very fair one indeed, and the examiners

always seem to do their best to help the candidates in every possible manner. This is more particularly the case with the *general* part of the examination, where, as regards surgery, the candidates are asked plain straightforward questions, which are put in a simple manner. As regards the *special* part, there, of course, the candidate is put to a thorough test; and this is what I think everyone must expect who wishes to obtain the L.D.S.

I have had a great deal to do with students who have passed, and with those who have not, and it is only from *some* of the latter I have ever heard of any unfairness, and in the majority of these cases they have been men who do not deserve to pass, for the simple reason they have not worked hard enough.

Apologising for the length of this letter, which I trust you will insert in your next issue,

I am, &c.,

105, Fulham Road,
South Kensington, S.W.

CHAS. P. GLASSINGTON,
M.R.C.S. & L.D.S. Edin.

CROWNING BURS.

To the Editor of the DENTAL RECORD.

Sir,—I notice an article in your May issue upon a shouldered bur. Towards the end of January last, I instructed Messrs. C. Ash & Sons to make a shouldered bur for preparing roots for crowning. On February the 7th, I received six such burs from them, and the bur appeared in their quarterly for March. I mentioned this bur in an article upon crowning in the early March number of the *British Journal of Dental Science*. After receiving the burs on February the 7th, I showed them to several members of the profession, and the students of the National Dental Hospital.

I am informed that Messrs. Hallam & Son received no instructions from Mr. Gabriel for a shouldered bur until the end of March. I leave the above facts to speak.

I am, &c.,

31, Cavendish Square, W.

THOS. G. READ.

May 23rd, 1889.

ANNOUNCEMENTS.**ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.**

THE next meeting of the above Society will be held at 40, Leicester Square, W.C., on Monday, June 3rd, at 8 p.m. *Business*—Paper by Dr. Ferrier, F.R.S.—“On some of the Relations of the Fifth Nerve.” *Casual Communications* by Mr. W. Scott Thomson, “On a Case of Irregularity.” By Messrs. J. Robinson and George Cunningham, “On the Occurrence of Crystal Forming Bacteria in the Mouth.”

STUDENTS' SOCIETY OF DENTAL HOSPITAL OF LONDON.

THE next meeting of the above Society will be held on Monday, October 14th. Paper by Mr. Oliver on “Anæsthetics.”

NATIONAL DENTAL HOSPITAL STUDENTS' SOCIETY.

THE next meeting of the above Society will be held on Friday, June 7th. Paper by Mr. Fisk on “Dental Education.”

VACANCIES.**DENTAL HOSPITAL OF LONDON.**

MEDICAL TUTOR, salary, £40 per annum. Applications on or before July 15th, to the Secretary.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.**PASS LIST.**

THE following gentlemen, having passed the necessary examinations, were admitted Licentiates in Dental Surgery:—Black Arthur, 8, Harley Gardens, S.W.; Colyer, Arthur Reginald, Hazelden, Thurlow Park Road, S.E.; Crassweller, Charles Walton, 6, Ashmore Road, W.; Dunlop, John, 1, Portland Road, Kilmarnock; Elphinstone, William Robb, 41, Hunter Street, W.C.; Faro, Richard Sidney Newman, 82, Upper Gloucester Place; Field, Edgar Albert Hector, 30, Lorrimore Square, S.E.; Fogg, Arthur, Sleighbury House, Stoke-on-Trent; Lonnon, Frederick, 77, Denmark Hill, S.E.; Norris, John, 159, Kingsley Road, Liverpool; Peckover, Charles Edward, 14, Pavilion Parade, Brighton; Porter, Frank Constable,

2, Richmond Terrace, S.W.; Rushton, William, 57, Devonport Road, W.; Timms, Samuel Day, 54A, Westbourne Street, S.W.; Wedgwood, Herbert Williamson, 293, Friern Road, East Dulwich; Wood, Robert Earnest, Horeham Manor, Sussex.

APPOINTMENTS.

THE following appointments have been made to the Dental department of Guy's Hospital:—

MAGGS, W. A., L.R.C.P., M.R.C.S., L.D.S., to be Senior Assistant Dental Surgeon.

MANSBRIDGE, J., L.D.S., to be Assistant Dental Surgeon.

MURRAY, H., L.D.S., to be Assistant Dental Surgeon.

PILLIN, H. L., L.D.S., to be Assistant Dental Surgeon.

RICHARDS, G. O., L.R.C.P., M.R.C.S., L.D.S., to be Assistant Dental Surgeon.

ROUW, R. W., L.R.C.P., M.R.C.S., L.D.S., to be Assistant Dental Surgeon.

COCK, F. W., M.D., Dur., to be Anæsthetist,

SILK, J. F., M.D., Lond., to be Anæsthetist.

STOREY, J. CHARLES, L.D.S.I., to be Hon. Dental Surgeon to Hull Royal Infirmary. (This is the first appointment.)

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side of the paper only*) by attaching their names—not necessarily for publication.

Queries and Answers are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

SIMPLE METHOD OF MAKING CASTS IN PLASTER OF PARIS.—In the process given in your last issue, Dr. Tetamore refers to the use of "paraffine," and incidentally mentions that the temperature required to melt it exceeds 130°. What he evidently refers to is hard paraffine wax, and he omits to mention that this is sold in different forms with seriously different melting points, varying from about 102° F. The yellow paraffine wax with a melting point of 120° F. and sold wholesale in this country at about 28s. per cwt., is the best for anatomical work.

The fault Dr. Tetamore refers to, *i.e.*, troublesome chilling, no doubt occurs with the paraffine wax having a high melting point, and most probably he is not aware of the existence of other forms of the same substance which are much better suited for the required purpose than the one he uses.—THOMAS FLETCHER, Warrington.

QUERIES.

DELTA writes to ask whether it is legal for him, being registered but not qualified, to use the title of Dental Surgeon.

* * It is perfectly legal for anyone on the register to assume any dental title he pleases. We would remind Delta (although our opinion is not asked on this point) that advertisements in *any form* are strictly unprofessional, and that his own circular—on the back of which he writes—is much to be deplored.

CASTING-SAND.—What is the best thing to make casting-sand bind well? I have been in the habit of using stale beer, which is used instead of ordinary water. Is there any better method? If any of your readers know anything of the manipulation of sand by brassfounders, they might be able to give some useful information on the casting of difficult models.—MECHANICAL STUDENT.

ANSWERS.

CAPSICUM PLASTERS.—In reply to "Dens" in April number of DENTAL RECORD, he may prepare his own plasters easily. In fact, home-made plasters are superior to those usually sold at the depôts. Prepare a strong tincture of Capsicum and Cantharides as follows:—

R Bacca Capsici, ʒi,
Pulv. Cantharides, ʒii,
Sp. Vini Rect., ʒx.

Macerate for 48 hours, then percolate, adding sufficient rectified spirit to make the product measure ʒx.

Soak wash-leather in this tincture until well saturated, then take it out and let it dry in the air. Afterwards cut it up in pieces suitable for use. As regards their utility, I deem them superior to the old iodine and aconite, as the latter is difficult to apply effectually, as it readily diffuses over the buccal membrane and tongue. Plasters are at least equally effectual and possess the advantages of being easily applied, cleanly, and indiffusible.—R.E.J.

POLISHING DISCS.—In answer to "Enquirer," Dr. Herbst of Bremen remarks: "When Polishing Discs are required for use where they are likely to become damp quickly, I coat the polishing surface with a solution of shellac in alcohol; this protects the material and prevents it from tearing, as it would if it were wet. The rigidity of a disc may be increased by fixing a metal shield, about one-third or one-half the size of the paper firmly against it on the end of the mandrel."

Metal shields can be obtained at the depôts.—J.H.

[It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 7.

Original Communications.

A NEW CROWN.

By W. ST. GEORGE ELLIOTT, M.D., D.D.S.

IN dentistry a large number of crowns are constantly made use of, and these crowns naturally vary considerably in form and character. It is therefore desirable to accustom ourselves to those which will meet the requirements of all ordinary work, reserving the more complicated arrangements for special cases.

Until lately, when treating bicuspid which have lost the outer wall, I have used what may be called a ring pivot, consisting of a plate tooth, soldered to a band of gold passing round the inner cusp, suggesting by its shape a signet ring. A number of these crowns, which were put in seven, eight, and ten years ago, are still doing good service.

Theoretically, there is a weak point in this form, the supposition being that decay is accelerated by the lodgment of food between the band and tooth; but, practically, I have never found this to be the case, as I usually line the band with soft gutta-percha.

Perceiving that there was no advantage in retaining the whole of the remaining cusp, I have within the past three years made the following modification:—I now cut the cusp about half off, making the band the same height as the tooth (Fig. 1). The gold is then

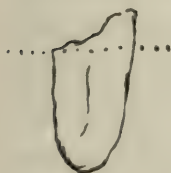


FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

carried over and entirely encloses the portions cut off (Fig. 2). I then introduce a wedge-pin (Fig. 3.) between the cusp and the porcelain face, which, penetrating into the nerve canal, not only gives stability and strength to the crown, when completed, but also keeps it firm while the amalgam is hardening.

Immediately before placing the crown in position, I fill the undercut nerve canals with soft amalgam and then varnish the gold to prevent the injury by mercury. This done and the crown in place, I push the wedge home, employing if necessary, a mallet for the purpose. The band being thus drawn to the tooth, amalgam is packed into the open space on either side of the wedge and small wads of Japanese paper assist in forcing the amalgam into position. When the cavity is full the operation is complete, and the patient has a good serviceable tooth (Fig. 4).

If impressions of the prepared root and the bite are taken at the first sitting, the work may mostly be finished without the patient, his presence being simply required for the final fitting and placing in position of the crown.

A FEW NOTES ON DENTISTRY IN SIAM.

By a LAYMAN.

It is perhaps doubtful whether any special interest would attach to, or whether any practical value would result from an account, rendered by an expert, of the state of dentistry in such a remote and little known country as Siam. When, however, this is attempted by one who can only claim that objective acquaintance with dentistry which he has obtained—by hard experience, it is true—in a dental chair, it is needless to expect that the profession can take more than a passing interest in the question. The few observations which will be made must therefore be necessarily short.

As so little is usually known by most people about Siam, I may perhaps be allowed to state a few brief facts concerning the place. Siam, or Thaï as it is known to the natives, covers an area of about 250,000 square miles, and the population is 6,000,000, as stated in foreign estimates. The capital of the country is Bangkok, on the River Menam, with from 400,000 to 600,000 inhabitants. These consist chiefly of Siamese, Chinese, Laotians, and Malays. A number of Europeans have of late years settled in Bangkok, and at the present day they number about 400. The nationalities of the latter, in order of importance, are English, Germans, French, and Danes. Among these the prevailing language is English.

The Asiatic population differ considerably in appearance, manners and customs, and as a rule they live in distinct and separate parts of the town. Of the Asiatic foreigners in Bangkok, by far the most

important is the Chinese. The small trades and industries are mainly in his hands, and as is generally reported of him in other countries, he is in Siam a most industrious and hard working colonizer. The Chinese for the most part live on the waterside, in boats, floating houses, and in houses built on piles fixed on the margin of the river. They effect transit from one to the other in boats, and often they are seen vending their wares in boats, which are rowed past the houses in a somewhat similar manner to that employed by the itinerant coster in London streets. The river Menam forms the chief and almost the only thoroughfare of Bangkok. With its riparian dwellings shaded by luxuriant trees, with its boats, steam launches, Chinese junks and shipping, it presents a most animated appearance. The Siamese live very much in the same manner on the banks of the Menam, but a large portion of the inhabitants, the aristocratic portion, as they consider themselves, live within the city walls near to the King's Palace.

Some Chinese appear to have white, regular and well formed teeth. The younger Chinamen who are brought into contact with Europeans are specially noted for this. But by far the larger portion of the Chinese, on account of the habit they have of chewing the betel-nut have black teeth, and dark red mouths. Both male and female are addicted to this habit. It would be interesting to know whether the betel-nut has preservative qualities or whether it may on the contrary be destructive to the teeth. The natives are of opinion that it preserves the teeth, and they say that once the tooth is properly coloured, decay is nearly impossible. The Chinese have native doctors, and dentists are not unknown amongst them. But as regards the latter, I understand that their duties simply consist of extracting teeth, and alleviating pain arising from decay. As to what may be called constructive dentistry, it is practically unknown to their native dentists. Yet, in spite of their want of skill, such native dentists as the Chinese have, manage to retain the patronage of their compatriots. Their establishments are not by any means inviting in external appearance, and in point of establishment and social position, the dentists among them rank about on a par with the barber, and in some cases the professions (?) are joined in one person. I was given to understand that a Chinese dentist in Singapore who, rejoiced in the name of Yang Lock Jau, combined to some extent the duties of the two callings, but was chiefly, as might be inferred from his patronymic, of the dental profession.

Betel-nut chewing appears to be more rife amongst the Siamese

than among any of the other nationalities settled in Siam, and black teeth are considered by them very beautiful. In defence of their peculiarity they say that a monkey has white teeth, from which it is to be inferred that man should have black ones. Whether this is the justification entertained by all who observe the custom of the country cannot be determined, but it is a matter of astonishment to all Europeans how universal the habit has become amongst the natives of the country. From the highest to the lowest—princes, ladies of high degree, noblemen, and commoners—all indulge in this national weakness, and it affords to the richer classes a means of rivalry amongst each other in the costliness and beauty of their betel boxes. As the public taste seems to have been so universally perverted with regard to what constitutes beauty in teeth, it follows that a dentist in Siam, to succeed among the native populations must be provided with black artificial teeth, which, I am told are in great demand with certain rich ladies in the city.

Among the European population medical practitioners chiefly practise dentistry. There are, however, a few visiting dentists who attend in Bangkok during certain months of the year. These usually emanate from Hong Kong, Singapore, and Colombo, as they do not find Bangkok sufficiently remunerative to induce them to take up their permanent abode there.

FOREIGN REVIEWS.

(By our Special Correspondent.)

METHOD OF OBTAINING PARALLELISM OF PIVOTS IN TUBES IN BRIDGE WORK.

At the May meeting of the Odontological Society of Paris, M. Godon presented an instrument for the above purpose. The need for such an instrument is very evident in removable bridge work. M. Godon continued his remarks on the instrument as follows:—"My first idea was to make in my workroom in a few minutes the little apparatus which I now present, and which, as you see, is very simple. It consists of two copper wires, of about the same size as the pivots, each bent at a right angle (at about the centre), the two horizontal parts being connected together (side by side) by two collars, which allow a sliding of the contained wires upon one another, and so cause the vertical portions of the wires to

approach or recede from one another, while at the same time parallelism is maintained between them.

"The two vertical stems are allowed to penetrate into the tubes during their fixation in the roots with cement, amalgam or gold, and thus secure parallelism of the two tubes to one another. For greater exactness, the two actual pivots can be soldered with tin to the ends of the two vertical stems."

M. Godon then presented a second instrument, an improvement on the foregoing in details, but similar in principle. He says:—"In this case, the horizontal stem consists of a long tube, open at its lower part, to allow the sliding of one of the two vertical stems. The vertical stems are held in the middle by two other horizontal stems. The two vertical stems each carry at their free ends a split tube with a sliding ferrule like a crayon holder, which holds the pivot without being obliged to solder it. The tubes (belonging to a special case mentioned by M. Godon) were fixed in position in the roots by the aid of this instrument; I was thus enabled to draw my two pivots away in my plaster impressions, the pivots being parallel, and was also enabled to construct for my patient two dentures, bridge pieces, which he could use indiscriminately without feeling the least difference, or the least discomfort." . . . "It is evident with an apparatus like this, parallelism can be obtained between three, four, five, &c., pivots, if they are required, by proceeding two by two, for according to the axiom, two lines which are parallel to a third are parallel to one another."

In the discussion which followed, the President (M. Dubois), remarked that he had discontinued the use of round pivots, and had adopted pivots oval in section, as oval pivots offered greater strength in the direction of the masticatory efforts, and necessitated less sacrifice of tooth-substance.

At the same meeting, M. Dubois introduced

A NEW MATRIX, Invented by PROFESSOR LEVETT.

THIS appears to be a very practical form of matrix. It is exceedingly simple, and consists of a thin flexible metal band with a square collar soldered flat on to the band at one end. The band is placed round the tooth; the free end is slipped through the collar; the band is pulled up tight round the tooth; and while still held tight, the free end is bent abruptly back, thus maintaining the tightness.

I imagine the free end must then be held tight during the filling process by the fingers of the left hand, or otherwise.

In introducing this matrix to the Odontological Society of Paris, M. Dubois remarked, that it satisfied the principal requirements of a matrix. It was easy of adjustment ; it was removed by a movement which was from within, outwards, and not from below, upwards, thus avoiding the risk of damaging the filling by pulling the contoured portion off ; it allowed of powerful pressure being used in packing, without fear of disarranging it, and he thought it would take its place among the best patterns.

M. Ronnet said that a matrix could be made to apply itself to the cervical edge of a cavity by packing in cotton wool between the matrix at this point and the next tooth. (I am in the habit of using an orange-wood wedge in the same situation for the same purpose).

Concerning matrices in general, M. Dubois remarked :—"The matrix appears to be founded on a logical basis ; as it supplies, artificially, a missing wall, one expects to transform an interstitial cavity into a crown cavity, but such is not absolutely the case. The good results obtained by stopping cavities of the grinding surface originate, not only because powerful pressure can be used in packing, but principally because of the contact of the filling material with solid and resisting enamel ; where also, the retention of products of decomposition is hindered. I am quite convinced that if a number of sections made of gold fillings in crown cavities, in the deep parts porousness would be found. Thanks to the outer layer and the position of the caries, that is without harmful consequences ; but, if such fillings existed in approximal cavities, they would fail. Lateral pressure is necessary for interstitial caries ; the matrix prevents it by masking the field of operations ; that is why I think they have but a very limited field of usefulness."

CRYSTAL GOLD.

At the same meeting a discussion was raised upon a new kind of *crystal gold* manufactured by Messrs. Contenau & Godard. A filling had been done with it at a demonstration and had been proved to be very soft and porous at the cervical edge. The usual objections were raised to its use as with other varieties of crystal and sponge gold ; the majority of members who spoke decrying its use except as a bed in remote corners of cavities where it would not be called upon to withstand any rough usage.

A tooth was presented by M. Poinsoy which had been extracted from the mouth of a person suffering from *locomotor ataxy* and which was very difficult to dislodge. This, he said, seemed to weaken what had been said about the loosening of teeth as a result of this disease.—*L'Odontologie*.

FOREIGN JOTTINGS.

IN connection with the Paris Exhibition a small place will be occupied in the palace of the Liberal Arts by an exhibition of dental specialities. *L'Odontologie* has promised to review all in the exhibition of special interest to dentists, and even things of more remote interest.

THE Association of Dentists of Frankfort-à-Maine has just celebrated its Twenty-sixth Anniversary. Among the demonstrations given on the occasion were several administrations of bromide of ethyl and other anæsthetics.

AN assurance agent in Paris has been touting for business among the dentists of that city by promising to place their names upon insurance policies as dentists to the company. The *Journal de Médecine de Paris* and the *Répertoire de Pharmacie* put their readers on their guard against these advances. As a consequence, the insurance company instituted an action for defamation against these two journals. The action was thrown out by the tribuna on the following conclusions:

"Whereas in the article inserted in the said number commencing by the words . . . and ending by the words . . . , the author of the incriminated article has not named the society "*Le Progrès*" as committing the swindles; whereas, moreover, he has not indicated it in a sufficiently precise and direct manner; and, in the matter, he has acted in an absolutely disinterested professional spirit.

"Whereas it follows from that, that one of the characters essentially constituent to an action for defamation is not met with in the article aimed at by the citation; on these grounds.

Acquit M. Martin (manager of the *Répertoire de Pharmacie*), and condemn the plaintiff (the Insurance Co.) to pay costs."

EXTRACTS.**CLOSURE OF THE JAWS FROM BILATERAL ANKYLOSIS.**

Treated successfully by Excision of both Angles of the Inferior Maxilla, after the complete failure of other methods.

Mr. WILLIAM H. BENNETT gave an account of this case. The patient, a waiter, aged 28, was admitted into St. George's Hospital on November 21st, 1888, on account of complete closure of the jaws, of three years' standing, from bilateral ankylosis of rheumatic origin. Two years before coming under Mr. Bennett's care he was an in-patient at another hospital in London, where the following operations were performed : (a) Removal of the left neck and condyle of the lower jaw, the ankylosis being so firm that the parts resected had to be chiseled away piece by piece. (b) After an interval of eleven days, excision of the opposite neck and condyle. (c) Five weeks later, the removal from the left ramus of a portion of bone about one inch in width. After the second of these operations there was some mobility for a fortnight, at the end of which the jaw became quite fixed. After the third operation, rapid ossification again followed, in spite of every attempt to prevent its occurrence. On admission into St. George's Hospital the man was unhealthy in aspect, and very rheumatic. There was complete and rigid closure of the jaws, no movement of any kind being possible. The scars of the former operations were manifest on the face, one on the right side, two on the left. On December 6th, Mr. Bennett exposed, through a small crescentic incision, the right angle of the lower jaw, and excised it. The anterior line of section commenced just behind the last molar tooth, great care being taken to separate any fibres of the masseter or internal pterygoid which happened to be attached to the maxilla in front of the resected part. The bone was divided by first grooving it deeply with a saw at the anterior and posterior margin of the part to be removed, and then rapidly completing the section by means of cutting forceps. No movement of any kind was obtained by this proceeding, as the ankylosis on both sides was complete. The wound having healed by first intention, the left angle was exposed and removed on December 13th, in the same manner as the right. As was anticipated, all power of swallowing was lost after this second operation, from the inability of the supra-hyoid muscles to act, in consequence of the loss for the time being of their bearings from the lower jaw, as the central part of that bone was completely detached and loose, after its entire division on each

side. Three days later the power of swallowing began to return, and by January 20th, 1889, solid food (minced) could be taken. On February 15th the mouth could be opened freely, the teeth being separable for an inch and a quarter. On April 26th, 1889, the date upon which the case was brought forward and the patient exhibited, no attempt at ossification had taken place in the false joints, the movements of the jaw being perfectly free. The greatest width between the teeth obtainable by voluntary effort was an inch and a quarter, the lateral movement procurable being exactly half the normal amount, but this could not be effected voluntarily. The patient, however, was able to utilise the lateral motion in grinding his food by working the chin from side to side with one hand. All passive motion had been discontinued for two months, partly on account of severe subacute rheumatism, from which the man had been suffering, and which gave rise to much general pain; although, under the circumstances, the movements of the jaw were at times painful, and the parts in the vicinity of the operations tender, no indication whatever of rigidity had shown itself. It was, therefore, considered fair to assume that the satisfactory result obtained thus far would be permanent. The case was recorded on account of (1) its obstinate nature and (2) the treatment finally adopted, the success of which was attributed partly to the seat of the operation, which was in each instance as remote as possible from the original centre of ossification, and especially to the care which was taken to separate all fibres of the masseter and internal pterygoid muscles from the central part of the jaw.

Mr. HOWSE mentioned that the patient had come to him with complete rigidity of the jaw, and it was uncertain at the time whether it was due to osseous ankylosis or simply to firm fibrous union. He then cut away a considerable piece of the neck of the condyle, but on one side it was found necessary to cut away a good deal with the chisel, leaving a gap of about three-quarters of an inch. Later on he also removed a portion of the ramus and neck of the bone on the opposite side. For a time movement was very satisfactory, but ultimately osseous union set in, especially on the side upon which the chisel had been employed. Discouraged by his previous experience, he refused to interfere any further, and the man went elsewhere, and he was glad to find he had fallen into such good hands. At the same time he said the result in this case would not lead him to adopt Mr. Bennett's operation in every case.

The PRESIDENT asked whether Mr. Howse's second operation included the coronary process and the whole thickness of the jaw.

Mr. JAMES BLACK said that if the ankylosis was only on one side, then Mr. Howse's operation might suffice ; but if on both, then the temporal muscle would tend to draw up the neck, and the ankylosis would consequently recur. In the former case he said Mr. Davy had obtained excellent results from removal of the condyle.

Mr. CROFT asked whether Mr. Howse's operation and that of Mr. Bennett included the periosteum. He said that Mr. Bennet's case did not belong to the ordinary category of ankylosis, and he gathered that the lateral variety was more common in children than in adults. Mr. Bennett's operation would be applicable to cases in very young children in whom the ankylosis had lasted for some time, rather than to cases in adults in which the disease was of less duration.

Mr. ANDERSON said he presumed that in the operation described by Mr. Bennett the internal dental nerve must have been divided, and in that case what were the results of this proceeding, and what loss of sensation had followed, and also whether this was restored after any notable interval.

Mr. BENNETT, in reply, said that he had removed a wedge-shaped piece, leaving the attachment of the temporal muscle. He admitted that the case was an exceptional one, and that its success was so far accidental that had the patient gone to himself in the first instance, instead of going to Mr. Howse, he would have done the same thing, and probably have arrived at the same result. In cases in which the tendency to osseous formation was so strong, it was obviously a disadvantage to leave muscles which would draw the two ends into contact, and it was that consideration which had led him to perform his operation. He called attention to the unusual ease with which the patient had obtained the lateral movements. He had certainly removed the periosteum. The nerve was also cut away, and so far there had been but very slight return of sensation over the affected area.—*Report of The Clinical Society of London from the British Medical Journal.*

THUMB AND TONGUE SUCKING.

By W. GEO. BEERS, L.D.S., Montreal.

Read before the New England Dental Society.

To many a child who resents weaning as an inhuman breach of maternal affection,

“ There's nothing half so sweet in life
As love's young ”—*thumb*.

Nature has designed a baby's thumb as the sweetest substitute for the mother's nipples, even for the supple stripling who can put his toe into his mouth, and wriggle off a nurse's lap like a globule of mercury. It is evident, that in spite of its horny tip, and the absence of the milky way, there is something to a baby in its own tender thumb, which adults have forgotten, and no gross soul can know. I have just asked my wife why a baby likes to suck its own thumb better than its mother's, and without intending a pun, she said, “ It is because it is handy.” The habit seems to verge upon a sort of self-cannibalism, without a parallel in the records of the Anthropophagi; and certainly without one in the history of our Indians, whose papoose, strapped in its “ raranon,” has no chance to indulge in fruitless sucking, unless it sucks its tongue; and I believe that sucking the tongue and lips, is only the revenge a child enjoys for depriving it of the opportunity to suck its thumb.

It is not surprising how a little habit, daily indulged in, will deform the features of the face in early life, when the cartilaginous and bony framework are soft and pliable: pulling the lobes of the ears, the lower lip, the eyebrows, each have their Nemesis in some unnatural result. I once had under my daily observation a lad who had caused a considerable protusion, as well as torsion of the left central and lateral incisors, from the inveterate habit of biting his left thumb nail, and I am convinced that many cases of irregularity of these teeth are due to just such simple but undetected causes. We know how easily teeth may be widely separated in a few hours, with wood or rubber; in a few minutes with a mechanical separator; how uneven occlusion, such as the anterior side of an inferior bicuspid meeting the posterior side of a superior cuspid, will deviate the weaker towards the median line above, or the posterior below. The constant and careless use of stiff tooth picks, even the vulgar habit of keeping one between the teeth, must do more mischief in producing irregularity than we imagine. But there is this difference between the bad habits of adult life and those of infancy; those of the former

never in any way affect or alter anything but the teeth and the transverse septa, and are not made hereditary ; those of the latter not only affect and alter the position of teeth, but create abnormal, developments of the whole alveolus, which frequently descend to succeeding generations. I know that this law of heredity does not apply to such abnormalities as cleft palate, hair lip, &c., frequently it follows the mature result of a habit formed in childhood, when it seems altogether absent as the result of habits begun in adult life. The irregularities of the teeth which owe their origin and first cause to habits occurring after maturity, cannot divert the direction of the anterior plate of the alveolus, unless deliberately and persistently applied with a force that would make them exceptional.

In cases of protrusion of the upper incisors it is easy to distinguish between those of a congenital and those of an acquired form. I have one case that is the best illustration I have ever met of the former. It is a perfect V shape from the first molars to the turned points of the centrals, and is an exact reproduction of the upper jaw of the patient's mother. These cases seem to be bred in the bone, and run in the blood, but I think the opinion of Dr. Kingsley is generally accepted, that they may have the hereditary tendency eradicated, if corrected as soon as they are developed.

Where no such hereditary transmission can be discovered, and where the peculiarity is not directly due to the retarded shedding of the deciduous teeth, outside of which the permanent ones may have erupted, it may safely be credited to the habit of sucking the thumb, even if the patient or parent deny it. The habit of tongue-sucking may become so unconscious that it may go on during the day, and even all night, unknown to the patient. Sucking the under lip has been frequently noticed when the child is awake as well as asleep, and it is not uncommon to observe the habits continued until the child is into its teens. I am not disposed to believe that the teeth of the lower jaw are much affected by thumb-sucking. It is said that they are frequently elongated and pushed back, but I cannot see how this can occur when the thumb is *in situ*, as the nail or knuckle rests on top of the incisors, and ought to prevent rather than produce elongation ; while the action of the strong tongue striking behind them at every suction, and the position of the lower lip in front, would seem to counteract any such effect as follows in the upper jaw. No matter how short or long a tooth is, it has its anatomical limit of enamel at the neck, and however elongated it may appear, it is not abnormally

so if the cementum is not visible, but you can perceive that they are naturally long. I have one remarkable case where it was declared that the lower jaw had been pushed back as a result of thumb-sucking, but it was a congenital malformation; the rami were short and small; in fact, it looked as if it did not belong to the skull, as the superior maxilla was very broad. There was an unsymmetrical development of the temporal bones, and a peculiar shortness from the symphysis to the last molar. The patient was about forty and yet there was no *dens sapientiae* in the lower jaw, while they were fully developed in the upper. The teeth of the lower were disproportionately smaller than those of the upper. There was a great fullness and depression of the occiput, what a Hibernian might call a hump-backed skull. These various malformations were distinctively congenital, and yet it was apparent that notwithstanding the distance between the upper and lower incisors when closed, thumb-sucking had caused the uppers to spread like a fan. I could not induce the patient under any circumstances to let me secure impressions. In the meantime, I am keeping my eye on him with the hope of a post-mortem. Of course the pushed-back appearance of this lower jaw was exceptional, but I have yet to see the first case where the lower incisors were elongated or pushed back by thumb-sucking. I can understand how sucking the lower lip as an inveterate habit, might draw the lower incisors backwards but never upwards.

Every one of us, no doubt, has met these cases in practice, and has found the difficulty in getting the patient to admit the soft impeachment. Very likely a thumb-sucker becomes unconscious of the habit in the delectation of the indulgence, and is as honest in his denials as the Greek sailor, who repudiated the charge of cursing, by swearing by all the Gods that he did not swear.

I have also a genuine case of an hereditary thumb-sucker, whose father's upper teeth were protruded by the same habit, and whose grandfather, on his father's side, had also caused an ugly deformity in the same way. To such an extent did this patient suck his thumb, that the nasal septum was deviated to the left side by the pressure of the fingers lying against the nose in sleeping. There was but slight respiration through one nostril. I have at my office a model showing the perfect regulation of this case, giving color to the theory that the deformity, even when transmitted for two generations, may be remedied.

I think it will be found in almost every case of thumb-sucking that the tonsils are enlarged, and the saliva vitiated. I have not met a case of an inveterate thumb-sucker that was not also a mouth breather, and it may be that this last habit originates as a coincidence of the former. If the patient sucks during sleep, the tongue will lie under the thumb, instead of in contact with the hard palate; the mouth will necessarily perform the act of breathing. I venture to believe there is a good deal of superficial diagnosis, and nonsensical writing indulged in as to the nasal and mouth results of mouth breathing. Dentists who are constantly at the open mouth from childhood, have more claim to be dogmatic in such statements, and it would seem to be their general opinion that while enlargement of the tonsils may occur, the assertion that uneven, irregular, or protruding teeth, and arched palate result from imperfect closure of the mouth, is not sustained by facts. There may be coincidences, and these would appear to be consequences. I believe that more careful diagnosis would trace the true origin to thumb or tongue sucking, and that the shrunken *alae* which lie close to the septum, are as certainly due to the pressure of the fingers during sleep, as the fan-like spreading of the incisors is due to the thumb. Specialists are apt to become fanatical, and to attribute every abnormality to a perversion of the principles they maintain; and to assert that mouth-breathing *per se*, will alter or affect the formed arch of the hard palate, is to show an ignorance of the anatomical and physiological laws of the maxillary. I admit the possibility of changing the form of the hard palate, but not by the natural or unnatural breathing. The acquired cause, if any, will be found to be in the thumb. When it is known that the spontaneous dislocation of the lower jaw has occurred from vigorous thumb-sucking during sleep; that the thumb is a hard mechanical force against the roof of the mouth and the teeth, and especially that the bones of a child are so easily altered by pressure, it is no surprise to find the palate behind the incisors of a thumb-sucker, a perfect fit for the patient thumb. The chief muscles used in sucking are those of the tongue. The centre of the tongue is depressed by the genio-hyo-glossi, and the side elevated by the stylo-glossi, and thus a vacuum is created. Of course the orbicularis oris is brought into play in seizing the thumb, much more than it could be in sucking the tongue, if it is used at all in the latter, but the tongue does the sucking. It is curious how inevitably this habit will extend from the thumb to sucking the clothes, and in fact,

whatever the young imp can get into its mouth. It is quite strange to witness the indifference of parents and even physicians where the habit is observed. One would imagine that the idiotic expression which often results would be sufficient to warn parents from neglecting it. If we, as dentists, have opportunity, as we should have, to watch the growing teeth at least twice a year, we can hardly fail to detect children addicted to these habits. Like sleeping with the mouth open, which can be easily cured by gently and frequently pressing the lips together in sleep, if taken in the outset, fruitless sucking can be cured by daily watching and nightly prevention. When parents are made to understand the evil consequences and the difficulty of treatment, they will be more disposed to follow the advice we give them. Some children can be easily restrained or cured by making the habit a subject of ridicule and shame; others must be put beyond the power to indulge in it. Whether you put aloes on their lips, gags on their mouths, boxing gloves on their hands, or Solomon's regulating apparatus on their buttocks, early and persistent attention will prevent one of the most unsightly deformities of the human mouth.

Just as I was closing this, I was given the accompanying slip from a paper:

"According to Dr. Berillon, the well-known French specialist, the practice of sucking the thumb at night, to which so many children are addicted, and of which it is next to impossible to break them, can be put a stop to by a single hypnotization, accompanied, of course, with the requisite suggestion. The child never by any chance returns to the old habit again, though his memory retains no trace of the order or prohibition which operates so powerfully on his will."

Dr. BLACKETT: This very interesting paper is now before you for discussion.

Dr. A. M. DUDLEY: From a case I once saw, I can heartily endorse what is said in the paper in regard to the ignorance of parents as to the result of allowing children to indulge in this habit. I was going home from some dental meeting I had been attending, with a friend. We observed a child with its mother, in the car, the child sucking away at its tongue. The whole expression of its face became distorted. We watched the operation as long as we could, and, seeing how indifferent the mother was, we finally thought it was our duty to go forward, and broach the subject to the mother, and warn

her of the danger which was coming to the child. The child was a little girl, eight or nine, possibly ten or twelve years old. The jaw had been badly deformed. To our surprise we found that the mother, instead of correcting the child, had rather indulged her in it, and had gone so far as to give the child something to hold in its mouth in the night to suck. She had not realised the serious results that were occurring from it, and was greatly surprised when we told her, that the child had a particle of deformity. The child never went to bed without something in its mouth to suck.

I had a case in my own practice, of a young lady, her father was superintendent of the public schools in Boston. This young lady had grown up to be twenty-two or three years of age, and had followed it up until she was grown up, and had done nothing to break herself of it until she went to a dentist in Paris, and then found out, for the first time, that the irregularity was the result of thumb sucking. The case had been treated by the dentist to correct the irregularity so rigorously, as to cause the death of the pulps, and my work consisted only in bleaching the teeth.

It is true that many parents do not realize that for their children to indulge in the habit of tongue and thumb-sucking, is to produce irregularities.

Dr. POTTER: I fully agree with the paper, and what has been said on the subject, but I know of a case of a child always taking hold of a blanket and sucking it. Her parents indulged her in the habit, and the blanket was cared for by the mother. When that child was about ten years old I noticed that the blanket had worn away till it was about a foot square. I think the lady is about twenty-five years old, and she has about the most beautiful set of teeth I ever saw.

Dr. A. H. GILSON: I would like to ask Dr. Dudley, if in the case he mentioned he saw any deformity in the upper lip? I have noticed that in the upper lip there is a groove, caused, I think, by the thumb.

Dr. DUDLEY: In both cases there was an apparent thickening of the tissues at the median line of the teeth, a shrinking of the lip, so that it did not come down over the teeth.

Dr. J. A. BAZIN, Montreal, P.Q.: I remember a case that I had about twenty-five years ago. The patient was a young man of seventeen, and on questioning him he admitted the fact of sucking his thumb in his "baby" days. I brought about a satisfactory result in a little over two months. It was done in this manner:

A gold plate was struck to embrace the bicuspid and first molars and extending outside well up on the gums. On these extensions I fastened lugs to which I tied small rubber rings, and when the plate was in position in the mouth I passed a silk ligature through the ring and drawing tightly around the outside of the tooth, tied. To prevent the ligature slipping up on to the gums I made from thin plate, two flat hooks, similar to crane hooks, which were put over the cutting edge of the central incisors, the ligature being caught and held by the other end being squeezed.

Thus constant traction was exerted, and plate easily removed. About twice a week new rings were put on, and rapid movement obtained.

I may say that as the teeth came to the desired position I found that the lower teeth interfered, as they were long and nearly touched the gum of the upper jaw.

By keeping up a strong pull I found that the roots of the incisors of the upper were being brought outward, the lower teeth acting as a fulcrum, and the facial lines being materially changed, and the whole expression of the face much improved.

In due course, the plate was removed, and the teeth ligated for some weeks, and some few months after no sign of yielding could be perceived.

Dr. A. W. COLVIN: Not having a model I wish the person was present. I expected she would be to-day. The case is of a young lady whose teeth protruded to that extent that she was ashamed of the appearance of her mouth, and would frequently cover her mouth with her handkerchief when conversing. I do not think the lip was shorter on one side than on the other, but had that appearance. The case just spoken of reminds me of my case. The inferior teeth striking the upper incisors and laterals so as to force them outward. I removed the left inferior incisor in order to make room. I then proceeded to force the whole front inward. The change was very marked. I have treated many cases of this kind, but none with such pleasing results to the patient and myself.

Referring to the incident of thumb-sucking, related to by Dr. Porter, it is readily seen that in sucking the thumb, the weight of the hand and fore-arm would have a greater tendency to draw the teeth outward than the sucking of the corner of a blanket, as the weight of the blanket would be less.—*Dominion Dental Journal*.

TOBACCO.

By E. J. COX, M.D., DAYTON, O.

ONE seldom reads of anyone writing favourably about the use of tobacco, it is almost always in regard to its abuse, and many write condemning it and those who use it in any form. Picking up the *North Western Lancet* of March 1st we find the following:—"Dr. Vincenzo Tassinari, assistant at the hygienic institute of the university of Pisa, publishes some interesting experiments with tobacco smoke on various pathogenic and non-pathogenic organisms. The duration of the fumigations varied from thirty to thirty-five minutes, and the quantity of tobacco consumed amounted to from $3\frac{1}{2}$ to $4\frac{1}{2}$ grammes. It was shown that tobacco smoke possesses the property of retarding the development of some pathogenic bacteria and preventing the growth of others. Thus the smoke from a large Virginia cigar retarded the development of the bacterium prodigiosum for 72 hours, of the staphylococcus aureus for 73 hours, and of the anthrax bacillus for 97 hours. No development of colonies of the spirillæ of Asiatic cholera and anthrax, and of the bacilli of typhus and pneumonia was observed after from 128 to 168 hours. The author regards these results as due to the chemical action of the ingredients of tobacco smoke."—*International Journal of Surgery*.

Reading carefully the above it seems that many of the theories advanced by some as regards the injury tobacco causes, must certainly be exploded. That the moderate use of tobacco in its various form, smoking, chewing, or the use of snuff (on the brush), is a positive benefit to the teeth, is, in my estimation, a fact that cannot be controverted; nevertheless much is written against its use. For the past fifteen years a partial record has been kept of many cases and there has yet to appear a case that has not received marked benefit from its use where it has been prescribed. Many may wonder why the subject has not been brought up for discussion. Once the anti-tobacco man of a dental journal crossed swords with a tobacco apostle, the result we all know; but notwithstanding all the anti-tobacco man writes, we defy him to bring us any whose teeth are firmer, stronger and more healthy than one who uses tobacco. It is nearly twenty years ago since, sitting in the corner, the old preceptor said to a patient in his chair: "Miss Emma, your teeth are white and very beautiful, and the decay is what is known as soft decay; if you wish to save them use Scotch snuff twice a day and I think that will do more good than anything else." Did

she do it? Yes. What is the result? She has lost but one tooth, although she married shortly after and has a family now of six children. Her brother, two years younger, was told to smoke or chew a little tobacco. He did not do so. For seven years he has worn artificial teeth. Yet which of the two, under these circumstances would be likely to lose their teeth first? Some may ask: Did she keep on using snuff? She did. Others again: Were the teeth, decay, and conditions alike? As near as possible. Do you believe, had the brother used tobacco, his teeth would have remained as his sister's? Most firmly we do.

Let us stop and look the issue squarely in the face; let us look at the foreigners who come to this country: the Irish, English, Swedes, or French, it makes little difference which; did any ever see more magnificent teeth. Now, *why* is it that after they have been in this country ten years, so few of the women have any of their own beautiful teeth left; yet in 95 per cent. the men have never consulted a dentist in their lives, and they and toothache are strangers; and we doubt if five per cent. ever have occasion to visit us, unless it is to have a loose tooth extracted. Now, there must be some reason for this. We attribute it to the fact that 95 per cent. of those men smoke—where they do not, they lose their teeth just as the women do.

Who has not seen this? Careful investigation will prove conclusively that what is said here is a fact. Take it in my own case. Seventeen years ago my old preceptor said: "I must look over your teeth; you have been here a long time and it may be necessary." Well, he did one day and said, "You have a good set of teeth and it will help them if you use a little tobacco. You have two or three that need attention. I will attend to them some day." Alas! the some day never came, for he died and my teeth remained as they were. Did we use tobacco? We did. And what of the teeth? they are just as they were seventeen years ago; so far we have not heard from them. "Some day," when we have time, some one will fill them.

This is not hearsay nor foolishness, *this is a fact*. If tobacco has not saved these teeth, what has? Now, how do we account for this? There is but one theory: what action does tobacco have, acid or alkali? beyond a doubt the latter. Then, if the saliva is acid what does it do? Neutralizes it and the teeth never suffer from an acid reaction of the saliva. This is the only explanation we have to

offer. Thereto might be added perhaps this theory, that tobacco destroys bacteria in the oral cavity and prevents their development, thus keeping the teeth in as good a condition as possible. Who among us have not noticed the cleanliness of the mouth and teeth of a confirmed tobacco chewer—if he uses it in moderation? They have certainly the purest breath.

Case after case might be recited here, and it could be demonstrated beyond a doubt, what good arises from the moderate use of the weed. Tobacco, like whisky, wine and beer, is a good thing in its place—use but don't abuse it, and you can obtain, we trust, good results therefrom.—*Dental Review*.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ordinary monthly meeting of the above Society was held on the 4th ultimo at 40, Leicester Square. The President, Mr. HENRY SEWILL, M.R.C.S., L.D.S.Eng., in the chair.

The minutes and other formal business having been disposed of, the PRESIDENT said that the Society would be sorry to hear that Mr. James Parkinson, their late treasurer, and one of the earliest members of the Society, had been compelled to retire from membership owing to ill-health, which necessitated his residing in the country. It was the recommendation of the Council that he should be elected an honorary member.

Mr. J. T. BROWNE-MASON in supporting the recommendation, expressed the great pleasure it afforded him to do so, and paid a warm tribute to the genial and many excellent qualities of Mr. Parkinson, who had been one of his oldest and best friends.

Mr. Parkinson's election was adopted by acclamation.

Mr. GEORGE CUNNINGHAM gave an account of some very interesting investigations made by himself, in conjunction with Mr. J. Robinson, of Cambridge University, which had led to the discovery of crystal-forming micro-organisms in the mouth.

The PRESIDENT interposing, suggested that the subject deserved more time than was at their disposal that evening, and hoped that Mr. Cunningham would give the Society the benefit of his researches in a paper. The further consideration of the subject was therefore deferred.

Mr. BETTS, on behalf of Mr. J. C. Storey, of Hull, read the notes of a case of fracture of the incisive portion of the superior maxillæ in a little boy aged 8. The accident was caused by his striking his upper jaw against the bar of a perambulator while in the act of jumping with his mouth open. Fracture between the intermaxillary bones and superior maxillæ resulted, and caused a projection of the four superior incisors at an angle of 45 degrees. There was little swelling or hæmorrhage. The displacement was reduced under chloroform by steady backward pressure, and the fragments resumed their normal position. Impressions were taken, and a vulcanite plate was made, the molar teeth being capped to raise the bite, to this a dental alloy retaining band was attached, which, with pressure, fitted the fractured portion. After wearing the plate for a month complete union seemed to be established. The incisors were apparently quite free from discoloration.

Mr. BETTS related a similar case: an amateur bell ringer was carried off his feet by the pull of the bell-rope and struck his jaws against the belfry, fracturing the incisive portion of the maxillæ. The displacement was reduced under gas, and held in position with wire splints. The case did well, except that the pulps of the incisors seemed to be dead.

The PRESIDENT observed that fractures in the upper jaw in young subjects seemed to do well; much better than in older patients.

Mr. J. T. BROWNE-MASON read the particulars of a case of death which occurred within eight hours of, and in connection with, tooth extraction. The facts were these: the wife of an agricultural labourer, aged 43, attended market in ordinary health and afterwards had a tooth removed without the aid of an anæsthetic. The tooth, a small stump, was removed without difficulty, but the patient became somewhat hysterical and respiration suddenly stopped. Artificial respiration was resorted to for eight hours, but animation was not restored. The surgeon in attendance was of opinion that death resulted from apoplexy. There was no *post mortem*. If the newspaper reports were correct, the woman had suffered for several years from headache and neuralgic pains; and there was, in all probability, some arterial mischief at the base of the brain. Mr. Browne-Mason thought it was a matter for speculation whether an anæsthetic would have averted the shock; his own idea was that the effect of nitrous oxide upon the brain would have been fatal, and thought that it would have been better to select ether or chloroform.

He felt that the interest of the case centred upon the fact that there was no evidence during life which afforded any clue to the diseased state of the cerebral arteries.

The PRESIDENT said that it seemed marvellous that a case of that kind could happen without a *post mortem* examination being held. Interesting as the case might otherwise have been, it would be profitless to discuss it for that reason.

Dr. FERRIER endorsed the President's remarks, adding that as the best observers doubted whether death had ever been distinctly traced to nitrous oxide, he would be cautious in saying whether or not it would have been wiser to employ an anæsthetic. It was much to be regretted that, in what seemed to have been a test case which might have thrown considerable light upon the subject, no *post mortem* had been held.

Dr. DAVID FERRIER, F.R.S. then read a paper on

SOME RELATIONS OF THE FIFTH NERVE.

The introductory portion of this paper was taken up with an anatomical analysis of the fifth nerve and other nerves in relation with it, in the course of which it was pointed out that the views held since the time of Sir Charles Bell as to the structural similarity of the fifth to a typical spinal nerve with its anterior and posterior roots, as, indeed, the whole of the current conceptions concerning the spinal nerves and their relations to the sympathetic system, had been considerably modified, more particularly by the researches of Gaskell. Gaskell has shown that the spinal nerves consist of two distinct systems, differing in their origin, their size, their mode of distribution, and their functional relationships. The one division forms the *somatic* system of nerves, which supplies structures and muscles of *animal* life. The other division forms the *splanchnic* system of nerves, which supplies the muscles and structures of *organic* life. The former, that is, the somatic nerves, consist of an efferent or anterior root, derived from the anterior horn of the spinal cord, and distributed to the skeletal muscles ; and a posterior, or ganglionated root, which is distributed to sensory organs. The splanchnic system, like the somatic, is also composed of different fibres. The differentiation of the spinal nerves into somatic and splanchnic divisions, and the relation of the latter to vagrant peripheral ganglia, throw a new light on the function of certain cranial

nerves, respecting which there has hitherto been considerable diversity of opinion. The third, fourth, portio minor of the fifth, sixth, and seventh cranial nerves, which are now purely motor in function, were at one time complete segmental nerves, and the sensory divisions of these nerves have been replaced by the sensory branches of the fifth. The nerve of Wrisberg and its branches, *viâ* the geniculate ganglion, constitute a splanchnic nerve probably wholly efferent in function. Of the nerves of the medulla oblongata, the hypoglossal, or twelfth cranial, is the only somatic efferent nerve; all the others, viz., the glosso-pharyngeal, vagus, and spinal accessory, are essentially splanchnic nerves, afferent and efferent. The glosso-pharyngeal and vagus innervate the alimentary canal and viscera from the pharynx as far as the hind gut and its appendages. The somatic afferent branches of the nerves of the medulla oblongata with all their complicated relations are contained in the sensory division of the fifth, which arises in close relation with the posterior horn as far down as the middle of the cervical region.

These anatomical data appeared to Dr. Ferrier to have an important bearing *inter alia* upon the pathology of what are termed sympathetic or reflex neuralgias of the fifth nerve. Thus, he said, it is well known that visceral irritation, unless reaching a high pitch of intensity, is obscure and non-localisable, whereas it is apt to project itself and become expressed in some somatic region, the central origin of whose nerves is in close relationship with those of the viscera in question. This is sympathetic or reflex neuralgia; and from the central relations of the fifth nerve to those of the viscera may be explained the headaches, toothaches, and other neuralgias of the fifth which are known to rise in connection with various forms of visceral disturbance. What should direct the incidence upon one branch more than another is not perhaps clear, but it may be assumed that if there are causes of irritation already existing in the region supplied by the fifth, *e.g.*, a carious tooth, exposure to cold, &c., these will cause a predisposition to the localization and expression of visceral irritation in this particular part. Thus an irritable tooth may at any time become the seat of intense pain under conditions of visceral derangement. The locality of trigeminal pain is by no means always an index of its local origin. For as stomachic derangement may be the cause of a frontal headache while the stomach itself is free from pain, so a general neuralgia of the fifth may have its origin in some related

visceral nerve, or in some branch of the nerve itself, such as a dental branch which is not itself conscious of suffering.

Referring to the relations of the trigeminal nerve, Dr. Ferrier alluded to the relation of the fifth to the muscles of the palate, remarking that it has been assumed by some that motor fibres from the fifth supply certain muscles of the palate, although it is more generally believed that the motor nerves of the palate are not inherent in the fifth nerve, but are derived from the seventh or facial nerve through the greater and lesser superficial petrosal nerves by way of Meckel's ganglion, and the otic ganglion respectively. These muscles, it is said, are apt to become paralysed by lesions of the facial at or above the geniculate ganglion. It has indeed been laid down in important text books as a canon of diagnosis that facial paralysis accompanied by paralysis of the soft palate, indicates a lesion of the seventh nerve in the position mentioned. Dr. Ferrier, however, observed that there are good grounds for believing that these views are entirely without foundation and that paralysis of the palate never occurs from an uncomplicated lesion of the fifth, or of the seventh in any part of its course. He had himself never seen any indication of paralysis of the palate in the numerous cases of facial paralysis examined by him in this relation. The opinion of Hughlings Jackson (*London Hospital Reports*, 1864), the experiments of Vulpian on dogs (1886), and those of Beevor and Horsley on monkeys (*Proceedings of the Royal Society*, No. 278, 1888), confirmed by similar results obtained by the experiments of Volckman and Hein (*Müller's Archiv.*, 1840 and 1844), have shown that no movements of the soft palate can be excited by stimulation of either the fifth or the seventh nerve within the skull, whereas stimulation of the spinal accessory or accessorio-vagus produces movements of the soft palate. These considerations, Dr. Ferrier said, might be taken as establishing beyond all doubt that the spinal accessory, and not the fifth or seventh, is the motor nerve of the palate. Paralysis of the palate, he continued, is apt to be associated with paralysis of the vocal cord on the same side, owing to the community of innervation, and this condition is not infrequently associated with paralysis of the fifth, as well as some others of the cranial nerves. In this connection he related the particulars of a case admitted to King's College Hospital, March, 1888, of paralysis of the left side of the palate and the left vocal cord associated with paralysis of the sensory and motor divisions of the fifth nerve, and later, by paralysis of the facial and sixth.

The association of paralysis of the palate with that of the fifth might have been taken as a proof of the relation of the fifth nerve to the palate, but the affection of the left vocal cord, and of the left sterno mastoid and trapezius muscles (referred to in the particulars), at once indicated implication of the spinal accessory. This case showed, among other things, that paralysis of the fifth nerve completely abolishes tactile and gustatory sensibility on the anterior two-thirds of the tongue. Dr. Ferrier referred to a case, already reported by him (*Lancet*, January 7th, 1888), and another under his care in 1884, showing that with complete uncomplicated paralysis of the fifth nerve, taste was entirely abolished in the anterior two-thirds of the tongue, but retained in the posterior one-third in the region of distribution of the glosso-pharyngeal. There can be no doubt, he said, that the glosso-pharyngeal is the nerve of taste for the posterior third or base of the tongue. The proof, however, depends more on anatomical and experimental evidence than upon clinical facts. A case, interesting, as bearing upon this question, was quoted from *La France Medical*, June 25th, 1888, where the patient, a man aged 34, suffered from left facial paralysis which had existed for some time, and was followed later by complete deafness of the left ear. The sensibility of the face was unaffected, and taste was intact at the anterior part of the tongue, but impaired posteriorly. The tactile sensibility of mouth and tongue were unimpaired except in the region of the pharynx. After death, which occurred in October, a glioma was found implicating the nuclei of origin of the facial, auditory, and glosso-pharyngeal nerves. The case, therefore, clinically confirmed the functions ascribed to the glosso-pharyngeal in respect to gustatory sensibility.

Dr. Ferrier, next referring to Schiff's view that the nerves of taste for the anterior two-thirds of the tongue run in the second division of the fifth nerve, proceeded to give particulars of two cases under his own care, which were distinctly opposed to the view, and proved that the nerves of taste from the anterior two-thirds of the tongue run directly in the lingual nerve, and not in the *chorda tympani*. Reviewing Gaskell's researches as to the constitution of the chorda tympani, and Vulpian's statement that it does not undergo degeneration after section of the seventh nerve within the skull, Dr. Ferrier said that considering its small size, it seemed almost an anatomical impossibility that this nerve, which undoubtedly contains, at least, a majority of efferent fibres, should also be equivalent to act as the nerve of special sense of such a large region

as the anterior two-thirds of the tongue; and it had always appeared to him very unlikely that the nerve of special sense of the anterior two-thirds of the tongue should take such a roundabout course before reaching the brain, as involved in Schiff's hypothesis. He then quoted several cases which inclined him to think that the loss of taste in the anterior two-thirds of the tongue in connection with facial paralysis, is not due to affection of the chorda tympani, but to joint implication of the inferior division of the fifth nerve.

In conclusion, Dr. Ferrier said, "the various facts which I have brought before you furnish, I think, at least a strong presumption that in cases of facial paralysis accompanied by loss of taste in the anterior two-thirds of the tongue, there will be found on careful examination some other indication of implication of the fifth nerve, and that in all probability this has escaped observation in the cases which have been put on record of apparent loss of taste altogether apart from impairment of the tactile sensibility in the tongue or other region supplied by the fifth nerve."

"It will probably occur to some of you to ask why the sense of taste should be ministered to by separate nerves—the lingual and glosso-pharyngeal? The answer to this question is without doubt to be sought in the morphological relationships of the region endowed with gustatory sensibility. There is reason to believe that so far as taste is a somatic function and connected with the movements of the tongue in mastication it is subserved by the fifth nerve, and in so far as it is a splanchnic function and related to the act of deglutition that it is subserved by the glosso-pharyngeal. We may thus term the lingual the somatic, and the glosso-pharyngeal the splanchnic nerve of taste."

The PRESIDENT: I am sure that it will be the wish of this Society that I should specially thank Dr. Ferrier for his kindness in reading his paper before us to-night. It is not an unusual circumstance for us to receive distinguished visitors whose presence is a compliment to the Society, but I am quite sure it will be your wish that I should convey to Dr. Ferrier how highly we appreciate the compliment he has paid us. He has himself done more than most living men to make a new epoch in physiological science. It is impossible to discuss the physiology of the nervous system without taking into account the new facts he has established and the theories which those facts suggest. We are the more indebted to Dr. Ferrier, because he rarely reads papers at Societies. I knew that he had an

enormous amount of material at hand and I feel under a personal obligation to him that he yielded to my solicitation. Such a paper as we have just listened to requires to be digested, and it is not easy at once to discuss it ; but I trust that those members who may have questions to ask or observations to make from a clinical or pathological standpoint will not hesitate, as the time remaining at our disposal is limited.

Mr. H. BALDWIN : I should like to ask Dr. Ferrier if in his opinion the sense of taste in the anterior two-thirds of the tongue is the same sense as that in the posterior one-third. I have always been under the impression that the special sense of taste is in the posterior one-third and that the anterior two-thirds was only endowed with an acute degree of ordinary tactile sensation. I have frequently experimented upon my own tongue by means of galvanism, and I have always found that galvanism of the anterior two-thirds produces only a pricking sensation, while galvanism of the posterior one-third produces a very marked sense of taste as of some metallic salt, such as chloride of zinc or nitrate of silver.

Mr. C. S. TOMES : The point in Dr. Ferrier's paper which seems to me of the greatest interest is the anatomical relation between the visceral nerves and the fifth. From time to time in our dental literature one finds cases where pain is referred by the patient to the facial region or even more exactly to the teeth. This has been attributed to some visceral lesion and with the disappearance of the visceral lesion the neuralgia has also disappeared. I must confess that I have often thought the recorders of these cases somewhat credulous and sometimes almost gullible people, but not always so. To-day I have seen a patient who has an intense neuralgia of the fifth nerve. He is suffering from tumour of the prostate, possibly malignant. This has increased to such an extent that a suprapubic operation is contemplated. As his prostatic symptoms have varied, so in like manner has his neuralgia. There is no cause for the neuralgia to be traced in any way to the teeth, but when his other trouble has become very bad his facial neuralgia has become intense. But the anatomical relation which Dr. Ferrier has shown us to exist between these nerves, proves that it is not gullible people only who place faith in the connection between facial neuralgias and distant sources of irritation. The case I have mentioned of course prove nothing, but is merely interesting in the light of the nervous connection which Dr. Ferrier has shown to exist.

Mr. R. H. WOODHOUSE : Dr. Ferrier in his paper spoke very fully and completely on the subject of the sensation of taste, but I did not catch from his remarks whether, or how far, he considered the palate has any connection with taste. As dentists, we often find that the sense of taste is lost for a time after the insertion of upper dentures, but is afterwards recovered. I think that the sensation of taste is not fully developed until the tongue comes in contact with the palate, and am therefore of opinion that the part played by the palate is a question we should like an opinion upon.

Dr. FERRIER in reply said : I beg to thank you for the very kind reception which you have given my paper. The discussion this evening has shown the value of different specialists occasionally meeting and discussing some point of common interest. Many suggestions have been made which I regard as of great value in my own inquiries. As to the sense of taste, there are still many points requiring investigation. People appear to differ greatly as to the relative development of the sense of taste in different parts of the mouth. I should myself say that the anterior part of the tongue is capable of appreciating every kind of sapid substance in greater or less degree, though there is no doubt that the back of the tongue is the most sensitive. This has been regarded by Bain and other psychologists as an inducement to deglutition. What the nerves of taste are for the anterior pillars of the palate and soft palate is the subject of differences of opinion. Probably they are branches of the glosso-pharyngeal. Mr. Tomes' remarks justify my having devoted so much of my paper to Gaskell's researches, for these appear to me to have an all-important bearing on this subject. The relation of the fifth to the visceral nerves indicated by these researches furnishes a clue to the explanation of many familiar facts which would be otherwise obscure.

The usual vote of thanks having been passed, the meeting then separated until November.

BIRMINGHAM DENTAL HOSPITAL.

The number of patients treated during the month of May was 523—Males, 148 ; Females 214 ; Children under ten years of age, 161. The operations were as follow :—Extractions, 531 ; gold fillings, 30 ; other fillings, 126 ; miscellaneous and advice, 105. Anæsthetics were administered in 43 cases.—FRED. R. HOWARD, *House Surgeon.*

STUDENTS' SOCIETY, VICTORIA DENTAL HOSPITAL, MANCHESTER.

THE fourth Annual Meeting of the above Society was held on Tuesday evening, May 28th. Mr. WILLIAM HEADRIDGE (Vice-President) in the chair. In his opening remarks he regretted the unavoidable absence of the President (Mr. LEOPOLD DRESCHFELD) through indisposition.

The minutes of the previous meeting were read and confirmed.

The following gentlemen were admitted as members.— Messrs. HEADRIDGE, HOOTON, SIBSON and SYKES.

On *Casual Communications* being called for, Mr. H. C. SMALE exhibited a lower denture to which an enormous mass of tartar was adherent. The denture had been in the mouth four years without removal.

Mr. SMITHARD showed a model illustrating an underhung bite, resulting from the after effects of diphtheria, which the patient had suffered from when three years old.

Mr. LINNELL showed models of immediate torsion which he had treated satisfactorily.

Mr. BIRKETT exhibited two abnormal teeth; one, an upper molar, showing a marked case of exostosis; the other, an excessively stunted first lower premolar.

The Report of the Council which was read by the Secretary, showed an appreciable improvement in the work of the Society on the previous session.

The Treasurer, Mr. C. H. SMALE, in his report showed a balance to the credit of the Society of £18 5s. 10d.

The following gentlemen were elected as officers for the ensuing session :—

President—Mr. L. DRESCHFELD (re-elected).

Vice-Presidents—Messrs. HEADRIDGE, SMALE, SMITHARD and CAMPION.

Secretary—Mr. W. BIRKETT (re-elected).

Treasurer—Mr. D. HEADRIDGE.

Councillors—Messrs. CARRINGTON, WALKER and SIBSON.

The Chairman announced that Mr. Smithard had presented to the library of the Society a copy of the *Medical Directory*.

Votes of thanks to the Chairman, retiring officers, and to the gentlemen who had brought forward *Casual Communications*, brought an interesting meeting to a close.

THE DENTAL RECORD, LONDON: JULY 1, 1889

LITERARY CRITICISM.

A LETTER from a correspondent in another column on the subject of dental literature calls attention to a state of affairs which, if true, reflects but little credit upon the dental profession in its highest, universal aspect. What the absolute or relative value of our special literature as a whole may be we will not here stop to enquire, but we would note a particular phase of the subject which is far from unimportant. If criticism—of any character—is to be healthy it must be honest; and if it is to be honest it must be founded on comprehensive competency. The critic's opinion is not the general verdict; but if it bears upon it the stamp of robust honesty, it must of necessity go far in preparing the way for the final verdict. Now, it strikes us that in the field of dental criticism, our reputation is neither desirable nor consistent with our due recognition as a special department of surgery. Any thoughtful reader can without difficulty call to mind numerous instances—both in this and other countries—where books entirely destitute, alike of scientific merit and of literary value, have been discussed in dental journals in a manner which is either reflective of gross ignorance, or of glaring insincerity, or of that maudlin mixture of false sentiment and slothful acquiescence which is sometimes termed “milk-and-water,” and is the distinguishing badge of a common-place vulgarity which is truly despicable. Better, far, for the author and the profession which he represents, that his critics should be harsh than that they should savour of flattery or ignorance! Cold steel may at least be honest—aye, and beneficial; but the criticism which is dressed up in the rags of parasitism is both nauseous and degrading.

Fortunately our societies are fairly free from taint, and

as a rule a man does not get up to speak of pseudo-science and pure nonsense for the very reason that he fears being made ridiculous. We, none of us, have large digestions for ridicule; and there is nothing likely to prove more useful in stemming the tide of worthless literature, or of encouraging what is useful and healthy, than out-spoken candour at the hands of those reviewers who are both capable and willing to serve the interests of truth by separating literary dross from the glittering metal. Journalism which cannot rise to this level is unworthy of its name and position, and, to come nearer home, the dental journal which either cannot or will not tell its subscribers the truth about the current literature which is entrusted to its criticism, is guilty of degrading the profession which it professes to have at heart, and of annulling its own status in the minds of all right-thinking men. Fortunately our younger practitioners are becoming better educated, and therefore more capable of weighing for themselves the opinions of others; and there is perhaps nothing more transparent to an enlightened reader than a trumped-up review, which bears upon its very face the evidence of its bogus seriousness. Fortunately these things will right themselves in time, for we may rest assured that any journal that persistently perverts its proper functions will in due course be left high and dry by the receding tide of popular favour.

Notes and Queries. We wish to make a special appeal to our readers on behalf of a corner of our journal, which by some is much prized—we refer to “Notes and Queries.” This is a column where success must almost entirely depend upon those for whose benefit it has been designed, and which will repay in practical benefit any amount of care which may be bestowed upon it. The editor and his coadjutors are ever ready to give what assistance they can, but if the individual readers do not send in their tiny contributions, what otherwise would prove a great success must of necessity languish and die. A great number of men are disinclined after a hard day’s work to sit down seriously and write a long article, but should any little

item of their experience strike them as being useful to others, the jotting down of it in terse language is the matter of a few minutes only. Our "Notes" are always open to little experiences of this kind. Then again, many of us—especially our younger brethren—are often perplexed in their work, and would like to ascertain the opinions of others and if possible benefit by their more mature experience. And possibly there are some who would like an opinion on a point of ethics. To such, answers are invariably given in a spirit which is at least intended to be honest, liberal, and unbiassed. We do heartily commend this column to our readers, and would earnestly appeal to them to give their individual assistance. If *each subscriber* were to contribute a note, query, or answer on any topic of practical interest *once a year*, we believe that although the individual effort would be but slight, yet in the aggregate the result must prove of inestimable benefit to all who are heartily interested in their profession. Although "Notes and Queries" are but a few months old, yet they have already been helpful to not a few, and in the future we look forward to their much increased usefulness. *Will you help?*

REVIEWS.

AN ESSAY ON ASPHYXIA. By GEORGE JOHNSON, M.D., F.R.S.,
London: J. & A. Churchill, 1889.

DR. JOHNSON has devoted much time to the study of asphyxia, and from scattered contributions of great value, has acquired some notoriety as an authority on the subject. It is, therefore, a distinct gain to science that he has enunciated his views in clear and concise language in the form of an essay, embracing a comprehensive view of the physiological and pathological bearings of such an interesting subject. After briefly describing the most recent and generally accepted doctrines of the physiology of the circulation, the author proceeds to the physiology of asphyxia—or as he prefers to designate it, *apnœa*—as indicating a deprivation of air. The relative amount of blood in the right and left cavities of the heart after death from apnœa, is a point which is discussed very ably and moderately, and we think the author's reasons for opposing the statement of recent physiologists, such as Burdon Sanderson, Michael Foster, and Gerald Yeo, that both sides of the heart are equally gorged with blood is scientifically convincing. The section

on nitrous oxide anæsthesia will prove of special interest to dentists, but the view advanced that the phenomena of nitrous oxide inhalation are but asphyxial is not likely to meet with much favour. The epileptiform convulsions described are by no means constantly present, neither is it common for the pulse to become imperceptible. If the phenomena of nitrous oxide inhalation are purely those of a deprivation of oxygen, how is it that the admixture of atmospheric air in any appreciable quantity increases the muscular symptoms which are said to be asphyxial in character? Dr. Dudley Buxton has devoted much time to the study of this question and has pointed out important differences between nitrous oxide narcosis and asphyxia, which must be answered before we can accept Dr. Johnson's theory. How a person who passes into a quiet sleep, often without a trace of struggling or circulatory embarrassment, can be said to be asphyxiated, requires some further explanation. The concluding section on a comparison of various pathological phenomena with those of apnœa is eminently practical as well as interesting. We can cordially recommend the essay to our readers as a truly valuable contribution to modern science.

TOOTH EXTRACTION. A MANUAL ON THE PROPER MODE OF EXTRACTING TEETH. By JOHN GORHAM, M.R.C.S. Third Edition. London: H. K. Lewis. 1889.

THIS little book is evidently written for the general practitioner, and the author has doubtlessly meted out what he considered sufficient for the wants and capabilities of the special class of readers whom he had in his mind. In this respect the time-honoured phrase which refers to the paucity of man's wants whilst "here below," might be legitimately made to include the sum total of knowledge required in the extraction of teeth. It is needless to say, that this "manual" (a term by-the-by which has become perverted of late) is quite useless to the dental student. Special reference is made in the preface to the introduction of a chapter on "anæsthetics," but with the exception of a very meagre account of cocaine injection, the subject is dismissed with the following paragraph, which may be indicative of much popular ignorance: "In dentistry the *anæsthetics* now in use are chiefly three, namely: *chloroform*, *nitrous oxide gas*, *cocaine*. Of these, the last named seems destined to become generally useful."

We trust that there are but few surgeons left who believe the antiquated notion that a broken down upper molar must be extracted with a "key," the use of forceps in these cases being "completely ineffectual." If the author is still sceptical on the point, we would invite him to visit the extraction room of one of our dental hospitals, where he may be easily converted. The description of the elevator and its uses is somewhat amusing; we are *naively* told that this instrument "consists of a blade terminated like a spear head," and that it is a "single lever of the first order." It has never been our good fortune to see an operator use a "spear-headed" elevator, but if the author means the ordinary straight elevator figured in any catalogue, he will perhaps be surprised to learn that in scientific hands it is a lever of the *third order*.

GOSSIP.

THE American Dental Society of Europe will hold its 16th Annual Meeting in Paris, on August 6th and 7th. The Society will meet under the presidency of Dr. St. George Elliott, at No. 8, Boulevard des Capucines, the Session commencing at 10 o'clock each morning. The following contributions have already been promised:—Dr. Miller (Berlin),—(1) Pathological condition in ivory (with demonstration); (2) Pathogenic bacteria of the mouth; (3) Antiseptic properties of filling materials; (4) Histological studies by aid of the optical lantern. Dr. Sachs (Breslau), will show and explain a prepared skull in regard to operative dental work. Dr. Patton (Cologne), Something relative to combination fillings and eclectic practice. Dr. L. C. Bryan (Basel),—(1) Improved dental ledger and bookkeeping; (2) New hot air syringe and other dental instruments; (3) Statistics on erosion. Dr. A. H. Chamberlain (Rome), Crown and bridge work. Dr. L. P. Haskell (Chicago), Continuous gum work. Dr. W. Mitchell (London), Crown and bridge work. Dr. George Fay (Brussels), Statistics and notes on cocaine. Dr. A. V. Elliott (Florence), Paper on emergencies. Dr. W. St. G. Elliott (London)—(1) Notes on antefebrian in periodontitis; (2) New amalgams, &c.; (3) New reducing valve; (4) New impression materials; (5) New pivot; (6) New G. P. stopping. We hope to be able to present our readers with a report of the proceedings.

THE January number of an American periodical entitled "Colorado Weather" contains an excellent article on "Palmer Lake as a health resort," by the late Editor of the DENTAL RECORD—Mr. (now Dr.) Gaddes. The article is illustrated by woodcuts, amongst which is one of Estamere House, the residence of Dr. W. Finley Thompson.

A PAPER published a short while ago had a long account of the virtues and attainments of a local dentist whom we will not advertise by mentioning. It is stated that "he has obtained first-class certificates of merit and gold medals from various International and Industrial Exhibitions, including London, 1886, Paris, 1887, Philadelphia, 1887, and Dundee, 1888"; but although so distinguished, we fail to find his name as a member of the British Dental Association or the Odontological Society. Such articles may be excellent advertisements, but the taste exhibited is simply execrable.

THE *conversazione* held at the College of Surgeons on the 12th ultimo was a distinct success. If it were possible for the President and Council to *issue* invitations instead of requesting their guests to *apply* for them, it would be more in harmony with our English ideas of hospitality. Two string bands of the Royal Artillery played alternately in the museum, and the library was converted for the *nonce* into a refreshment buffet. The feature of the evening was an exhibition by Mr. Eadweard Muybridge of some new experiments in connection with instantaneous photography. There were projections by the Oxy-hydrogen Light of the Automatic Electro-photographic Apparatus used for his investigation of Animal Locomotion, now being published under the auspices of the University of Pennsylvania, by means of which consecutive photographic exposures are synchronously made from two or more points of view, at exact and regulated intervals of time. The projections illustrated consecutive phases of movement by various quadrupeds while walking, trotting, galloping, &c.; of birds while flying; and of men, women, and children while engaged in the labours, pastimes, and other muscular exercises of everyday life. Synthetic illustrations of

many of these actions were projected by the Zoopraxiscope, and reproduced in apparent motion.

THE Annual Dinner of the Middlesex Hospital Club took place on May 16th at the Holborn Restaurant. We were pleased to see one of our own specialty in the Chair—Dr. Joseph Walker—and to find that Mr. David Hepburn and Mr. Alfred Smith—well-known in the dental musical world—were the principal contributors to the harmony of the evening. All dental licentiates who were educated at Middlesex will be welcomed into the club, and should send their names to Mr. Andrew Clark, the indefatigable secretary.

THE prospectus of the New Dental School at Guy's has been issued. It is neatly got up and contains much useful information for the student. Before the next edition is printed, it might be as well to avoid the criticism of facetious students by amending the inference—if not the statement—that electric mallets are used in the treatment of exposed pulps, pulpless teeth, &c. A list of the lecturers is given on another page.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

DENTAL LITERATURE.

To the Editor of the DENTAL RECORD.

SIR,—The gratitude of the profession—both American and British—will be earned by all journalists who will follow the course which you have lately adopted and who will criticise in the way they so richly deserve the inferior works on dental subjects, which now-a-days are more and more frequently issued from the press. It is not necessary to ask, it would be perhaps impossible to discover, the motives of individuals who, without one single necessary qualification for the task, set to work to compose "text books" and "manuals" of dental science; but there can be no doubt that publication of such writings tends to inflict injury upon the reputation of the whole pro-

fession, and this injury is increased by the apathy or toleration with which the books in question are treated as a rule by professional journals. In this matter we must rely for a remedy upon ourselves ; medical papers although they are ready to notice deserving works will not give space for examination and condemnation of dental literary rubbish.

In production of this kind of writing, Americans have been for many years by far the worst offenders. During my connection with medical journalism, throughout a very long period, almost every dental work issued from the press has passed through my hands for review. I can recall only one English manual of dental surgery which could be fairly described as being mainly composed of nonsense ; but, on the other hand, I should be at a loss to name any American work of the kind which was *entirely* and *throughout* up to the lowest standard of literature and science, whilst some (such as those you have recently reviewed), might be easily mistaken for consistently wrought-out parodies of the subjects with which they deal. Two or three lately published American books hold much the same relation to dental science as A'Beckett's "Comic Histories of England and Rome" hold to the story of those countries. In Mr. A'Beckett's books the fun depends upon a playful "topsy turveydom" in the narration of events and in caricature of the personalities of historical figures ; the whole being set forth in a witty punning fashion. In their systematic confusion of facts, in their misuse of common scientific phraseology, in their introduction of burlesque terms and expressions unknown to scientific language, in the negation of logical reasoning displayed by their statements, the dental authors to whom I refer, run the comic histories close in the result—the production of a ludicrous travesty of serious subjects. In some respects they out-do the avowedly comic writer. He depends in his language upon puns and witticisms, his style being clear and his grammar unimpeachable ; but they display an entire disregard of all the necessary conventionalities of orthography, etymology, syntax, and prosody, and revel in a "nice derangement of epitaphs" which might make Mrs. Malaprop die of envy. It is astounding often to find that these men claim possession of degrees not only in dentistry and medicine but in arts. It seems impossible they can have passed any examination which could be a real test of knowledge.

For the sake of the highly educated body of men which both in this country and America pursue dentistry as a profession, it is to be

hoped that a check may be put on the production of pseudo-scientific dental literature of the kind to which I refer. I believe the evil may be abated by the action of the dental press, if it will systematically hold offenders up to the ridicule they deserve. For the part which you are evidently willing to take in this good work I would express my own feelings of obligation.

I am, &c.,

H. SEWILL.

THE DENTAL EXAMINATION.

To the Editor of the DENTAL RECORD.

SIR,—I am much indebted to your correspondents who have written in reply to my letter on the above subject in the May number of your journal. Several points have been brought to light which were—at least to some of us—somewhat hazy and obscure. The ignorance which exists amongst the *alumini* of the College of Surgeons as to the regulation of visitors to the examinations is pretty general, and the ventilation of the subject can do nothing but good—indeed, the reflections of “S. S.” on the capabilities of the students who present themselves for the dental examination ought to be a stimulus to the teaching authorities of our dental schools who do not appear to turn out the candidates as efficiently as they might do. Is the curriculum at fault? or is the system of teaching archaic and inadequate?

I had no wish when writing to convey the inference in any way that the dental examination of the English College of Surgeons was *unfair*. Those of your correspondents who have been the visiting guests (happy souls! do they realize the difference of their emotions when they were candidates?) are distinctly of opinion that the examiners are particularly easy going—indeed there is just a suspicion that our newly-fledged licentiates are not weeded quite sufficiently. Be this as it may, the occasional visits of those qualified to be present—and I quite endorse the opinion that, as a rule, they should be *teachers*—can be productive of nothing but encouragement to the examiners, while the trembling examinees have at least the consolation that they are standing at the bar of an *open court*.

I am, &c.,

M.R.C.S., L.D.S.

CROWNING BURS.

To the Editor of the DENTAL RECORD.

SIR,—I must apologize for occupying your valuable space with matter of such slight interest, but the nature of Mr. Read's statements demands that I should make some reply to his letter.

In the first place, Mr. Read is probably unaware that the idea of reducing the circumference of a root by means of a fissure-shaped bur is not altogether new.

When I was in New York in 1885 Dr. Grant of that city was using such a bur with a guiding plate to keep it applied to the root.

This, I believe, was made only for him and never placed in the market.

Following his ideas in my subsequent crown operations, I used (as I have previously mentioned) an ordinary sugar-loaf bur, together with Dr. Starr's trimmers, until it occurred to me to add a shoulder to the bur.

At the time I conceived the idea of the combined instrument, I was unaware of anything in this direction having been previously attempted, indeed, I enquired of the Dental Manufacturing Company, through their traveller, if anything of the sort were to be obtained.

As they could not furnish me with what I required, I asked them to carry out my ideas. Being, however, from pressure of work, unable to promise the bur until three weeks at least, the order was not placed with them, but, subsequently, with Hallam. The bur made by him I received on April 2nd.

Now, it is true that an article by Mr. Read appeared in the *British Journal of Dental Science* for March 1st, containing the following sentence: "The enamel is trimmed off all round the stump with chisels. When this is accomplished, the edge should be squared with a squaring bur."

I maintain, however, that those words alone did not and could not suggest anything to me or anyone else who had not a similar idea.

Mr. Read states that an account of his "squaring bur" appeared in *Ash's Quarterly* for March, but he omits altogether to mention the *date* when this appeared. "Our quarterly circulars were despatched on *April 4th* per our own carrier" is the reply I have received from Messrs. Ash in answer to my enquiry on this point.

Thus I have shown that the only published account that could have suggested to me the nature of Mr. Read's bur never saw light until two days after my own were actually finished.

I think I have sufficiently substantiated my original statement that the burs were independent of one another, although from Mr. Read's letter I find he was first in the field.

If, however, Mr. Read still chooses to consider the "Crowning Bur" an alteration, imitation, or mere copy of his "Squaring Bur," so far as my personal feelings in the matter are concerned, he is welcome to do so.

I am, &c.,

WM. M. GABRIEL.

P.S.—Since writing the above, I find that both burs are modifications merely of the instruments described in Evans' "Artificial Crown and Bridge Work," pp. 15 and 16. I may add that, in another article in *Ash's Quarterly* for March, entitled "Tube-tooth Crowns," Mr. T. G. Read refers to this work.

23, Gloucester Gardens, W.

June 19th, 1889.

[This correspondence must now cease.—ED.]

THE INTERNATIONAL DENTAL CONGRESS AT PARIS.

To the Editor of the DENTAL RECORD.

SIR,—The fact that a Dental Congress is included in the long list of Congresses to be held in Paris in connection with the International Exhibition requires some little explanation, and (for a variety of reasons) several members of the "Commission d'Organisation" have requested me to explain their position to their professional brethren in this country. The proposal to hold this Congress originated with the Association Générale des Dentistes de France by sending Mons. Paul Dubois, the editor of their journal *L'Odontologie*, to bring the matter before the Dental Section of the International Medical Congress at Washington. It is evident, therefore, that our French *confrères* could have been inspired by no spirit of animosity to their Eastern neighbours, since at the time when their decision was made it was impossible to foresee where the next Congress would be held, whether at Berlin or elsewhere.

Like many other of our professional brethren, when our opinion was asked as to the advisability of holding a separate Dental Congress, we felt that we were only expressing the general feeling of the profession by deprecating the institution of any separate Congress as likely to weaken, at any rate to some extent, the Dental Section of the International Medical Congress. It is, however, obvious that without the International Exhibition this International Dental Congress would not have been possible, and it must be admitted that the circumstances are exceptional.

A joint committee was formed representing the following bodies :—L'Association Générale des Dentistes de France and La Société d'Odontologie de Paris on the one hand, and L'Institut Odontotechnique de France and La Société Odontologique de France on the other. This joint committee decided that an International Dental Congress should be held, and nominated a Committee of Organisation to carry out the project, and especially to invite the aid and assistance of foreign dental practitioners and dental societies abroad.

The following may be regarded as the essential features of the coming arrangements :—

The Congress will be under the patronage of the Government, which has undertaken to defray certain expenses of publication.

The Congress will be held from the 1st to the 7th of September, and no dues will be exacted from foreign visitors.

The Congress will be divided into several sections, as follows :—

I.—Anatomy and Physiology (normal and pathological).

II.—Operative Dentistry (including also dental materia medica and therapeutics).

III.—Mechanical Dentistry (including the treatment of irregularities).

IV.—Dental Education and Instruction.

Communications may be made in French, English, German, Italian or Spanish. In order to enable the majority of Congressists to be acquainted with the conclusions arrived at in the papers, the committee undertake to translate into French the conclusions, or an abstract of papers written in foreign languages, if the manuscripts are sent before July 1st, on the condition that the abstract will not exceed six pages of printed matter.

In order to facilitate and concentrate discussion, the following questions have been adopted, and though communications on any

branch of the Science and Art of Dentistry will be welcome, the members are specially invited to make known their views on those questions with which they are most familiar and on which they have made original researches.

Under *Section I.*

- (1) Race : characteristics of teeth.
- (2) The *rôle* of micro-organisms in dental and oral pathogenesis.
- (3) The influence of nutrition upon the production and on the arrest of dental caries.
- (4) Dental and oral terminology and classification.

Under *Section II.*

- (1) The treatment of teeth with diseased and of those with dead pulps.
- (2) The comparative value of gold and plastic filling materials for the obturation of teeth, with an account of recent improvements in filling materials.
- (3) Local anæsthesia.

Under *Section III.*

- (1) Indications for and methods of artificial crowns and bridge work.
- (2) Conditions requisite for executing the regulation of teeth and the alveolar arches, with an account of new methods of regulating.
- (3) On the choice of materials for the construction of artificial dentures.
- (4) Restoration of the face and of the maxillæ.

Under *Section IV.*

- (1) Instruction in dentistry, methods and duration of study.
- (2) Dental and oral hygiene during the periods of dentition.

It is evident that this programme has been laid down on a broad and intelligible basis, and now comes the vital question. What should be the attitude of the profession of this country in the face of a movement which must now be regarded as inevitable, and which if efficiently carried out and loyally supported, must do much to improve the science and art of dentistry, both in France and abroad ? The coming Congress has already received considerable attention in the American and the Continental dental journals, hence we are in a position to at once answer some of the contentions which may not unnaturally arise in the minds of some readers. A fear has been

expressed that the title "International Congress" might be looked upon by the medical profession as a virtual withdrawal from the International Medical Congress. The late Dr. Brasseur in a letter written only two days before his death, deprecated not only any such result, but also that such an impression could arise.

Professor Dubois, than whom it would be difficult to find anyone more directly in touch with the feelings and sentiments of the dental profession in France, writes as follows:—"Until now we " have had but very infrequent relations with our *confrères* on your " side of the silver streak. The dental movement, of which the " Americans and the English have been the promoters, has deter- " mined analogous movements in other countries. It has taken in " Germany and in France, directions somewhat different from those " which you have imparted to it. We cannot ignore what passes " in other countries, and more especially in that of our nearest " neighbour. With us dentistry has been transformed within these " last ten years. The equitable appreciation of that transformation, " the exchange of ideas with your continental brethren, may be " regarded even as a duty you owe our common profession, and you " could not but find it to your advantage that England should be " largely and worthily represented at the Congress of Paris."

It has also been reported that the best men are keeping aloof from the movement. This report is quite unfounded, since the Committee embraces the names of the most active and the most prominent leaders and teachers of the day, and is representative of both the leading professional associations and schools.

In France, as in most other continental countries, the dental profession is divided into two great and opposing camps, on the one hand, the surgeon practising dentistry, and on the other, the dentist pure and simple. In this country the battle is happily over, and victory rests where in the best interest of any people it must finally rest, namely, with the latter.

The institution of this Congress by the representatives of the dentists has compelled those of the surgeons to participate in the general truce which has been offered for the purpose of promoting the Congress and welcoming their foreign *confrères* in the name of the whole profession.

It would surely be a pity for such co-operation to cease with the termination of the Congress, and if our interest, our participation and our experience can do anything, and I firmly believe it can do

much, to transform this temporary truce into a long and lasting peace between these rival forces, it should surely be a pleasurable duty to see that our societies and that our profession in general are largely represented at the International Dental Congress.

I am, &c.,

GEO. CUNNINGHAM.

VACANCIES.

DENTAL HOSPITAL OF LONDON.

MEDICAL TUTOR, salary, £40 per annum. Applications on or before July 10th, to the Secretary.

KING'S COLLEGE HOSPITAL.

PROFESSOR of Dental Surgery and Dental Surgeon. Applications to the Secretary.

EXAMINATION QUESTIONS.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE following questions were set for the last Examination for the Diploma in Dental Surgery on May 6th, 1889 :—

ANATOMY AND PHYSIOLOGY.

1. Describe the parts concerned in the operation for Closure of a complete Cleft of the Hard and the Soft Palate.
2. Describe the entire course and distribution of the Lingual Artery.

SURGERY AND PATHOLOGY.

3. Describe the process of repair of a Fracture of the Lower Jaw. Give the treatment you would adopt in this accident. (The fracture is supposed to be between the first molar and bicuspid teeth.)
4. Describe the various forms of "Closure of the Jaws," and give their appropriate treatment.

DENTAL ANATOMY AND PHYSIOLOGY.

1. Describe the attachments of a human tooth. Mention other varieties of implantation in sockets, and enumerate, with examples, other methods of attachment.
2. Describe the changes by which space is provided for the

permanent Incisors, Canines, Bicusps, and Molars respectively. At what ages are their roots severally completed?

3. What is meant by (i) Brown Striæ of Retzius; (ii) Sharpey's fibres; (iii) Interglobular spaces; (iv) Lines of Schreger; (v) Bunodont, Acrodont, Selenodont.

DENTAL SURGERY AND PATHOLOGY.

1. Discuss fully the operation of Torsion of Teeth, and state how you would employ Cocaine for such an operation.

2. Enumerate the drugs which have a harmful effect upon the Teeth or the Gums. Describe the effects produced and their treatment.

3. Describe a Kingsley and a Suersen Obturator.

How would you take the impression, and what conditions must be observed in order to satisfactorily vulcanise Velum-rubber?

APPOINTMENTS.

THE following appointments have been made to the Guy's Hospital Dental School:—

BIRD, T., M.A., M.R.C.S., to be Lecturer on Anæsthetics.

GROVES, C. E., F.R.S., to be Lecturer on Metallurgy.

MAGGS, W. A., L.R.C.P., M.R.C.S., L.D.S., to be Lecturer on Dental Anatomy and Physiology.

NEWLAND-PEDLEY, F., F.R.C.S., L.D.S., to be Lecturer on Dental Surgery.

RICHARDS, S. O., M.R.C.S., L.D.S., to be Lecturer on Dental Mechanics.

MANSBRIDGE, J., L.D.S., to be Demonstrator of Dental Microscopy.

ROUW, R. WYNNE, L.R.C.P., M.R.C.S., L.D.S., to be Tutor.

RILLOT, C. F., L.R.C.P.Lond., M.R.C.S., and L.D.S.Eng., to be Dental Surgeon to the North West London Hospital, *vice* W. A. MAGGS, L.R.C.P., M.R.C.S., and L.D.S., resigned.

PEDLEY, S. EDWARD, M.R.C.S., L.R.C.P., L.D.S., to be anæsthetist to the National Dental Hospital, *vice* J. F. W. SILK, M.D.Lond., resigned.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor, 2, James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers, 6 to 10, Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and Answers are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

A RARE COMPLICATION OF TOOTH EXTRACTION.—G. P., aged 35, a police inspector, came to the Dental Hospital complaining of toothache, and referring the pain to the right lower wisdom. On examination, the tooth was found to be dead, with acute periostitis. The gums, in its immediate neighbourhood, were inflamed, but there were no evidences of suppuration having occurred, although it seemed imminent. Extraction of the tooth was decided upon. Gas was administered and an attempt made to "elevate" the tooth. The anterior root was dislodged, and, thinking it was in the mouth, the dresser ceased operating to remove it. It was then found to be lying *beneath* the mucous membrane at a point directly below its original situation, where the mucous membrane was reflected from the side of the jaw on to the floor of the mouth. Attempts were then made to extract it through the alveolus it formerly occupied, but they only tended to push it further towards the middle line. It was therefore extracted by cutting down upon it through the mucous membrane. The posterior root was then extracted with forceps. The case is interesting from its extreme rarity. Had the stump been overlooked in its new situation and had it set up trouble for which the patient sought the aid of a general practitioner (the "medical man" who advises his patients to poultice alveolar abscesses on the outside), what his diagnosis would be and what surgical atrocity might result is painful to speculate upon.—T. E. CONSTANT.

ROOT FILLING.—I write to say that the description of root filling contained in your last issue is a hint which I have adopted and like very much. It appears to be cleanly and efficacious, as far as my limited experience goes. I mix the plaster of Paris very thin with a watery solution of perchloride of mercury 1—500. The canal is then smeared with the mixture and finally packed home with wool on a Donaldson bristle. I recommend my fellow readers to try it.—G.

PRACTICAL NOTES.

I SEND you some cuttings from the *Dental Review* on practical points which perhaps your readers may not despise simply because they are not original.—OLD FILE.

AN EASY AND QUICK METHOD OF MAKING A COUNTER-DIE FOR SWAGING CUSPS FOR GOLD CROWNS.

Make of sheet brass, using hard solder, a cup three-fourths of an inch in diameter and half an inch deep, having a spur on one side by means of which it can be held in a pair of pliers; fill it with Melotte's fusible metal. Select a natural or artificial tooth for a model; fill the soft rubber ring that comes with Melotte's Moldine with plaster, and invest the tooth so that the cusps project out of the plaster as far as it is desired to copy them; when dry remove the rubber ring. Melt the metal in a cup, and just before it hardens in cooling, press the cusps of the tooth into it. The surplus metal will run over the sides of the cup, and a sharp and perfect counter-model will be secured, into which the gold plate can be swaged after the method of the S.S.W. die-plate, using the lead hubs or bullets. I also use for this purpose sheet lead of one-sixteenth of an inch thick, cut in strips $2\frac{1}{2}$ inches long and $\frac{1}{4}$ to $\frac{1}{2}$ an inch wide, one end of which is folded upon itself two or three times letter S fashion, the other end being long enough to hold it by. As it becomes flattened in swaging, it can be folded back and forth over the gold plate.

By having one or more of these cups and a sufficient selection of teeth already invested in plaster, it is but a moment's work to select the size desired, and make the counter-die. Should it lose its finer lines in swaging, it can be re-melted and an exact duplicate obtained in less than a minute.

USE OF SOLUBLE MEDICATED GELATIN IN FISTULÆ AND AROUND THE ROOTS OF TEETH.

Upon having my attention called to the efficacy of soluble medicated gelatin in the treatment of inflamed and suppurating mucous surfaces in different portions of the body it appeared that it might be employed to advantage in the treatment of fistulæ and pockets about the roots of teeth. After a thorough trial I am convinced that it is one of the most convenient, positive, painless, and cleanly methods of medication, in these conditions, that we have.

The preparations used are those of Dr. Chas. L. Mitchell, of 1016, Cherry Street, Philadelphia, in which any medication desired can be obtained. With the anodynes, astringents, coagulants, alteratives, antiseptics, stimulants, sedatives, &c., available in Dr. Mitchell's list of preparations the demand in any condition can be met, but, inasmuch as the conditions for which we most often use a remedy in this form are those in which a mildly astringent coagulant action is desired, a small variety of preparations can be used in the treatment of all conditions presented. The pencils or bougies medicated with sulphate of zinc, or sulphate of zinc with carbolic acid, with an anodyne if desirable, can be used to advantage in most fistulæ and pockets about the roots of teeth, the facility with which they can be placed in contact with the diseased tissue being their chief recom-

mendation. For fistulæ, a point of the proper length and size can be cut from the side of a pencil or bougie which, on account of its flexibility, can be readily passed to the extreme depth of the tract. For pockets about the roots of teeth a shaving can be taken from the surface of a pencil or bougie, which will be found to be especially adapted to deep and tortuous pockets. The form best suited for this purpose is the intra-uterine pencil, which is three inches long and three six-tenths inches in diameter. Small lachrymal bougies and fistulæ crayons are made, but by cutting the points from the large pencils the cost is reduced very materially.

QUERIES.

STRENGTHNERS.—Will any one tell me where I can get aluminium—thin and perforated for strengthening vulcanite dentures? I am told it is very light and strong. Is it expensive?—MECHANICUS.

ANSWERS.

CASTING SAND.—Mechanical Student had better stick to his stale beer, I know of nothing better. In difficult undercut lowers, oil the surface and run a plaster core. The sand should be *just wet enough* to bind without being too damp to the feel.—OLD FILE.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from May 1st to May 31st, 1889:—

					London.	National	Victoria.
Number of Patients attended					—	2754	1076
Extractions	{ Children under 14	...	...	...	419	329	777
	{ Adults ... ..	...	...	...	1295	519	
	{ Under Nitrous Oxide	...	...	...	1110	958	115
Gold Stoppings	...	...	...	...	410	211	52
Other Stoppings...	...	...	...	...	1390	499	76
Advice	...	...	...	...	221	394	—
Irregularities of the Teeth	...	...	...	...	49	102	—
Miscellaneous and Dressings	...	...	...	...	298	139	342
Total	...	...	...	...	5,192	3,151	1,362

[It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 8.

Original Communications.

ON DENTOGENY.

By A. HOPEWELL SMITH, L.D.S.ENG.

House Surgeon at London Dental Hospital; late Assistant Demonstrator of Histology at Charing Cross Hospital Medical School.

RECENT literature on the subject of Dental Histology has done much to elucidate many obscure and incomprehensible matters, to clear up debatable points and to advance new hypotheses of interest and importance. The exertions of Tomes, Magitot, and Kölliker have been expended in this direction with most successful and gratifying results. Facts, pre-existing as theories, have been ascertained, doubts resolved into accepted truths, and errors in judgment and discernment corrected.

But the whole field has not been surveyed; portions of its wide area are as yet unexplored; paths on its surface still untrodden. Of all the various divisions into which dental histological research falls, perhaps the most difficult of comprehension, the most intricate in its minuteness of detail, and at the same time the most interesting, is the subject of the development of the dental tissues. Its range is necessarily a limited one, yet how little is practically known about it! It is impossible to watch, day by day, the growth of dentine, to see the cells of the ectodermic and mesodermic layers of the embryo become transformed, re-arranged and adjusted until a tooth is perfected *in toto*. It is impossible to note any pathological changes that may occur in a tooth's substance, and to observe the exact moment when the rudiments of the disease-germ are introduced, how they increase and multiply, and how they proceed to their terminations. Metabolism and trophic variations are only facts in the abstract.

Beset as it has been on all sides by numerous problems, the explanation of the process of enamel development, as now given, is worthy of general acceptance: it is straightforward in its line of progress, and clear in its consummation. Not so, however, with dentine. Here fresh structures, new cells, whose functions are not yet

absolutely determined, appear, and play an important part in its construction. Thus, on the external surface of the dentine papilla, there is a single clearly-defined layer of multipolar, nucleated cylindrical cells, whose appearance in this situation warrants the suggestion that they possess some special function. Again, lower down, granular, branched, and round cells exist in numbers: to the former the term "odontoblast" has been applied, the latter are un-named. The rest of the papilla is made up of branched connective tissue corpuscles, muciparous cells, and fibrous tissue lending support to the vascular and nervous elements of the pulp, and carrying an especial blood-supply to the cells of the *membrana eboris*.

In fully-formed dentine, three highly-specialised structures present themselves—fibril, sheath, and matrix; each being separate and chemically distinct from the other. In the formative organ two only are found, viz., odontoblasts, and the un-named stellate or round cells. Therefore, two sets of cells, differing in shape and function, are the producing agents of the three different dentinal structures. Much polemical argument has been devoted of late to the great question as to which of these latter are matrix formers, and which fibril and sheath originators. Some observers, including *Tomés, †Waldeyer, Boll and Beale, affirm that the single odontoblast becomes converted into all three: others such as ‡Schäfer, §Kölliker and Lent consider that, while the fibrils and sheaths are products of odontoblasts, the matrix of dentine is formed by some other medium. Klein, *per contra*, says (*Atlas of Histology*, 1880, p. 185) that "odontoblasts only yield dentine matrix proper—the fibres are derived from the processes of the cells of the deeper layer." Now, histologically speaking, there is abundant testimony to show that a fibril is part and parcel of a cell,—is, in fact, a process of an odontoblast: a good section, and a good microscope demonstrate this at once. But the formative organ of the matrix cannot be so easily determined, the chief difficulties being—First, that it is impossible to observe a cell in the direct act of secretion, or undergoing conversion into semi-calcified material; and Second, that the absence of visible lines of demarcation in the completed dentine does

* *Dental Anatomy*, 1882, pp. 160-1.

† Stricker's *Histology*, 1870, vol. i., p. 489.

‡ Quain's *Anatomy*, vol. ii., p. 558, 1882.

§ *Manual of Histology*.

not justify a definite opinion, in this respect, as to the method of its production. Hence it is necessary that proof of a different character should be brought to bear on the point at issue, and this is furnished by due consideration of the functions and uses of the so-called odontoblasts.

An odontoblast may be regarded as a highly differentiated cellular organ, akin, in some degree, to the multipolar ganglion cells of the spinal cord. Its processes are similar ; its structure identical ; its shape only altered by the mutual apposition of neighbouring cells. Could an odontoblast undergo complete segregation from its neighbours, and still retain its normal environment, it would probably be found to take the shape of a Purkinjè's cerebellar corpuscle, or, at all events, that of a ganglion cell in the posterior cornua of the spinal cord. Its processes claim for it a just distinction from any other cell in the whole of the enamel or dentine organs of the tooth. Hence it clearly exists for some special function, and what more appropriate than that of a sense organ ? A cell of such complex organisation must have some special duty to perform.

Inasmuch as dentinal fibrils are sensation carriers, as they are regarded functionally in the light of nerves, and as they are the processes of odontoblasts, therefore, the latter are sense organs, and their duty is to protect the æsthetic and nutritive pulp from such devitalizing effects as are due to traumatism or caries.

It is therefore claimed for an odontoblast that, as it has the important functions of a sense organ to fulfil, and as its energies seem to be required to be expended wholly in this direction, it cannot perform, by any means, the subservient but very necessary duties of dentogeny.

It is a histological fact that special and similar cells perform special and similar functions, and so one cannot believe that while some odontoblasts form fibrils and are consequently sense organs, others form matrix and are secretory cells ; or that the functions of a young odontoblast become changed as the cell grows older.

Might not, then, a dentinal fibril represent a process of an odontoblast which, being pushed away from the external surface by the advancing line of calcifying dentine, is drawn out into a long tube-like process ?

One odontoblast may form one or more fibrils by a metamorphosis in shape of its dentinal processes.

Before calcification has commenced, the peripheral (dentinal)

processes are numerous. Boll has counted as many as six from an individual cell. Each process is converted into a fibril or fibrillar branch, the smaller forming the branches, the larger the fibrils. After calcification has begun, the odontoblast recedes from the surface of the formed dentine; in doing so the processes are lengthened out, some remain at right angles to the cell; some coalesce through their running towards each other, and thus united advance for a certain distance. The lateral (inter-cellular) processes have, by this time, become—from the shrinkage of the cell—nearer the periphery, and they, in like manner, leave behind a trail or branching, which in its turn either coalesces with another process or runs, *per se*, to form a new fibril, or as a branch anastomoses with another branch of another cell, and so on until the whole of the fibril through the thickness of the dentine is completed. This explains the cause of the various forms taken on by odontoblasts as observed in a section, no two being exactly similar in shape and size.

The dentinal poles of the odontoblasts are of greater thickness below that part of the surface of the dentine which is normally covered by enamel than those elsewhere (*vide illustration*), hence one would expect to find thicker fibrils and fewer branches in this situation, which is easily demonstrable in fully calcified dentine.

An odontoblast which has formed a portion of a fibril and some of its branches, does not necessarily atrophy, but being replenished internally either by nourishment from the pulp or the addition of a new formative cell to its end, continues to lengthen out at the pulp extremity, while the dentinal end tapers off and becomes converted at the same time into fibril and branches. It seems impossible for an odontoblast to atrophy, and another take its place so accurately that its processes would continue the fibrillar formation of its antecedent.

Hence the opinion that *one* odontoblast forms one or more fibrils and their branchings. Therefore, when once a cell has started to form a fibril or fibrils, it continues to do so until the whole thickness of the dentine is completed. Thus also is explained satisfactorily the development of the dichotomous branches of the dentinal tubules.

Some odontoblasts probably atrophy.

The dentinal sheath may be regarded as being merely a prolongation round the process (which has been transformed into a fibril) of the cell-wall of the odontoblast, which is continued on to its process,

and only acts as a kind of insulator to the fibril, in much the same way as the medullary sheath of Schwann protects the axis cylinder of a nerve fibre. Waldeyer and Boll doubt the existence of a limiting membrane to the cell, but they have not brought forth any arguments to prove their statements.

The dentinal matrix is not a product of the odontoblasts, but is a secretion from the small branched and round cells lying in close proximity to the cells of the membrana eboris.

Tomes * in a few sententious remarks on dentine development, bases his arguments in favour of the theory of matrix-formation by odontoblasts, on (*a*) the narrowing of the calibre of the tubule at the periphery of the dentine, and (*b*) the phenomenon of caries as it affects dentine. With regard to the first, the narrowing of the tubules is more apparent than real, and can be explained in the following way. If the membrana eboris of an embryonic tooth-germ be examined, each component part will be found to be a very small cell, having a diameter of from $\frac{1}{1600}$ to $\frac{1}{2000}$ of an inch, and if it be compared to that of an adult tooth, the cells of the latter will be found to be twice or three times as large, $\frac{1}{900}$ to a $\frac{1}{1000}$ of an inch.† The inference, therefore is, that as the tooth grows and increases in size, so do the individual odontoblasts. In the formation of a tubule, the earliest odontoblast—that which laid its foundation, so to speak—was very small; but as it received nourishment from the pulp, so it increased in size, had larger and thicker processes, and consequently produced a gradual widening of the calibre of the tubule. Again, in senile dentine, the tubules to their finest ramifications are still patent, and do not, however old the tooth may be, entirely disappear; one would not expect this if a fibril represented a young sheath, and a sheath a young age of matrix, as Tomes suggests. With regard to caries, whether or no the matrix is formed by odontoblasts, one would expect to find it disappear the first, then the sheath, as being an intermediate stage of development, and finally the fibril. As a matter of fact, the matrix representing the inorganic part of dentine becomes firstly disorganised, but the fibril is not the last to vanish, as sheaths are found in both decalcified, carious, and fossilized teeth. And this could not be if the theory were correct!

* *Op. cit.*, pp. 161-62.

† Average diameter of an enamel prism is $\frac{1}{5000}$ th of an inch.

„ dentinal tubule is $\frac{1}{4500}$ th of an inch at centre of tooth

I would submit the following reasons in support of the theory that dentogeny does not depend on odontoblasts, and that only the small round cells have any part in matrix formation.

1. No observer has ever seen a semi-calcified odontoblast or a cell undergoing any changes prior to calcareous secretion.

2. It is impossible for the same cell to take on two different functions simultaneously, and produce both matrix and fibril at once. There must be a separate cell for the formation of each of these structures.

3. Each odontoblast is not placed so closely to its neighbours as obtains in the adamantoblasts. Between some of the cells of the membrana eboris there are wide visible spaces filled with a homogeneous substance, and small round and angular cells (*vide illustration*).



Taken from the dentine organ of an embryonic mammal at birth, $\times 350$. Shews odontoblasts *in situ*, their variations in shape and size, their processes (one of which is bifurcated), and those near the centre (A) being thicker than the others; the visible intervening spaces (B); the fibrils passing through the formed yet uncalcified dentine (C); the homogeneous matrix in which the cells are embedded (D); and the completed dentine (E).

4. As fibrils and tubules are known to cross interglobular spaces, and as the latter are considered to be an arrest of dentinal development, one would expect that if the fibrils were formed by the same agents as those which produce matrix, the fibrils themselves would be wanting: and this is not so.

5. After decalcification, the matrix may be torn into laminæ, which run parallel to the surface of the pulp cavity, whereas they would run at right angles to the surface if odontoblasts were the formative cells of the matrix.

6. No lines of demarcation have ever been seen in dentinal matrix.

7. Fibrils can be seen in formed dentine, which is as yet uncalcified. This would be impossible if they were originally the same substance, differing when formed only in degrees of calcification (*vide illustration*).

8. On the addition of an acid (HCL or $\text{HC}_2\text{H}_3\text{O}_2$), the granularity of the cell does not in any way clear up, nor does immersion in glycerine cause shrinkage of the odontoblast. Magitot,* so long ago as 1857, asserts:—"L'alcool et les acides leur font éprouver les mêmes modifications qu'aux autres éléments anatomiques, mais la glycérine fait palir le noyau et la dissout complètement en quelques heures sans attaquer la cellule: la cellule d'émail présenter sous la même influence un caractère inverse."

9. The line formed by the extremities of the cells does not accurately correspond to the line of already calcified or semi-calcified dentine.

10. The layer of cells is imbedded in a homogeneous matrix which partakes of the properties of protoplasm, and stains deeply. This is either a conversion of the mucoid material of the pulp itself into dentine or a secretion from the small round cells on its surface. Analogy would point to the latter as being the more probable, as it obtains in the method of secretion of ossific matter by osteoblasts in the development of bone.

Syllogistic argument, theoretical inference, logical reasoning and experimental research tend thus to show what are the probable agents of dentogeny; but dogmatic statements from the incompleteness of knowledge on this subject, cannot as yet be given with that accuracy and indisputable authority that science in every range calls for.

Meanwhile one may rest in, and be satisfied with, the belief that the building of the dentinal wall of the tooth-pulp does not depend on the integrity of the odontoblasts, but on the functions of the small secretory cells of the pulp surface; and that while the former are active agents, governing and protecting, as sense organs, its interior, their duties only ending at the death of the pulp, the latter are more passive agents, serving merely for mechanical purposes by secreting matrix and discharging their functions only up to that time when the full development of the tooth is completed.

* "*Etudes des Dents humaines*," p. 31.

OUR PARIS LETTER. (I.)

(Translated by our Special Correspondent.)

[It is with much pleasure that we are enabled to lay before our readers the following translation of the first of a series of PARIS LETTERS; one of which is promised us quarterly by the staff of the Parisian dental journal *L'Odontologie*, in return for a similar series by our own staff, for insertion in that journal as LONDON LETTERS.]

MR. EDITOR,—The great activity which prevails now-a-days in Dental Art has called forth in almost every direction schools, societies, reviews and journals which are the very best means of attaining professional progress. It daily gives rise to exertion, inventions, or actual discoveries which render it more necessary than ever that professional bodies in different countries should have some means of keeping in touch with one another.

By the publication of regular correspondence we can help to spread abroad and render common property the works of our fellow labourers, thus allowing dentists of different countries to unite their efforts for the common good.

On this account it is with the greatest satisfaction that we give our assistance in this direction; we, who have always taken an active part during the last ten years in the dental reform movement.

This becomes still more necessary as we approach the date of opening of the impending International Dental Congress. On the eve of seeing one another it is necessary to know one another.

We have often deplored the ignorance in which our brethren on the other side of the channel remained of the struggle we have been carrying on in France for ten years, and of its results; but just in the same way how ignorant we were of the situation as regards the English professional body, seeing that we used to get but very vague intelligence about it.

One of our honoured *confrères*, our esteemed President of the General Association of French Dentists, Mr. E. Lecaudey, has, by a very faithful translation of various historical documents, shown us last year, the different incidents of the campaign which English dentists, with SIR JOHN TOMES at their head, have conducted, since 1870, against the pretensions of medical men who were trying to absorb the art of dentistry, and has shown us how they proceeded to the organization of their profession; we have learnt by this means

of the foundation of your schools and societies. That campaign has ended by the crowning of your efforts.

The same struggle has been maintained in France during the last ten years ; the two same parties are to be found disputing the predominance in the organisation and direction of the art of dentistry.

But we can really say that after a struggle, sometimes a very lively one, the French dentists have very nearly gained the mastery. Before 1879 there was no professional organization in France ; no scientific society nor any school ; hardly a journal—only the *Progres Dentaire*, edited by the firm of Ash & Sons.

Several attempts, however, had been made, but without success ; notably in 1845, when a society of dentists existed for a year or so.

About the beginning of 1879, several dentists united and founded a society called the “Syndical Chamber of Dental Art.” The chief end in view was to obtain from the government the enforcement that every dentist, before being allowed to practise, should possess the diploma of Doctor of Medicine. The civil powers, badly enough informed, seemed favourable to that solution.

The majority of dentists, above all the young ones, stirred themselves against this pretention. They united to defend their rights and the same year founded the “Circle of Parisian Dentists.” A very lively antagonism existed between the two societies. Whilst the former tried to obtain the restrictive laws from the government which it claimed, the latter, which saw the number of its adherents increase daily, set at once to work to reform and raise dental art in France.

Six months afterwards (December 1879), your humble servant one of the founders of the “Circle,” had the honour of taking the initiative in the creation of the first French dental school. Less than a year afterwards the “Dental School of Paris ” was founded by the aid of a public subscription which brought in nearly fifty thousand francs, then organized and opened.

The new school rapidly gained the approval of the public. The teaching staff was well chosen and well adapted to its objects. It has forty-five students the first year. Since that time the number has not ceased to increase. In order to set an example, the youngest among the founders inscribed themselves as the first students, resolved to undergo the examination which they were desirous of

imposing upon their fellows. The duration of the curriculum was two years. It was soon advanced to three.

The "Circle of Parisian Dentists" had started a journal, a modest *monthly record*. A year afterwards, a scientific society was founded under the name of the "Scientific Association of the Dental School of Paris." The "Syndical Chamber of Dental Art," in spite of the support of certain official bodies, obtained no share of the management. In the face of the success obtained by the new school, it decided to found a similar institution on the same model under the name of the "Dental School of France."

Since that time the two schools have developed and work together side by side. The "Dental School of Paris" has about a hundred students every year. The "Dental School of France" has about fifty. They constitute the only places for the teaching of dental art in France. At the end of their studies they deliver to their students who have passed their respective examinations successfully a certificate, possession of which gives them the title of *Diplômé of the Dental School of Paris* (D.E.D.P.) and *Diplômé of the Dental School of France* (D.E.D.F.) respectively.

These diplomas are already known and esteemed by the public.

The two chief professional groupings which were formed at the outset have been gradually modified, perfected and transformed, by accommodating themselves to the laws and customs of the country.

The "Circle of Parisian Dentists" was re-organized in 1884, and has become the "General Association of French Dentists," and is the largest of our societies in France. It has three hundred and fifty members. It comprises the following sub-divisions:—

- 1st.—The Dental School of Paris.
- 2nd.—The Hospital or Clinic attached to the school.
- 3rd.—The Odontological Society of Paris.
- 4th.—The Dental Provident Fund (relief fund).
- 5th.—The Dental Committee.

Its official organ is *L'Odontologie*.

The "Syndical Chamber of Dental Art" at about the same period became the "Odontotechnic Institute of France," with the following sub-divisions:—

- 1st.—The Dental School of France.
- 2nd.—The Clinic of the School.
- 3rd.—The Odontological Society of France.
- 4th.—The Committee of Dental Art.

Its official organ is *The Odontological Review*.

A few weeks ago, most unhappily, it lost its two most active founders, MM. Audrieu and Brasseur.

These two societies work side by side, and it must be acknowledged they both do good work, and after their own fashion help forward the same cause.

The animosity which existed at first between the two groups is diminishing. The work of the forth-coming Congress, in which they are uniting their efforts, cannot fail to contribute to that effect.

There is still another society in France occupying itself with matters concerning the teeth ; but the members of it are exclusively medical men, who would fain profit by the advantages the practice of dentistry affords, but who reject with scorn the qualification of dentist, so they have named their society "The Stomatological Society of Paris."

It is a small society consisting of about a score of members. It consists mainly of M. MAGITOT and his pupils.

Their official organ is *The Medical News*.

At last the movement which was started in Paris is beginning to have its counterpart in the provinces. We have just learned of the founding of the "Odontological Society of the South West" at Bordeaux. It actually comprises about twenty-five members.

Similar societies are also on the point of forming in other districts.

This is then, as nearly as possible, a statement of the position of the profession in France.

The members of the "General Association of French Dentists," and of its sub-divisions, display great activity. They maintain relations with the best known dentists of America. The Society has sent delegates to Germany. It was represented at the recent International Medical Congress at Washington by two members, MM. Dubois and Kuhn. The monthly meetings of the Odontological Society of Paris are very full and very interesting.

The Dental School of Paris figures at the Universal Exhibition where it has on show :

1st.—Apparatus or instruments invented and improved by the professors, students, or members of the Society.

2nd.—The syllabus and illustration of the processes of teaching employed at the school.

3rd.—The catalogue and specimens of the principal scientific works.

The catalogue given in last month's *L'Odontologie* contains a list of all the objects on view in the show-case belonging to the school.

Among others there are :—

In the Teaching Series—Specimens illustrative of the different processes of operative dentistry and dental prosthesis by Professors Heidé, Lemerle and Ronnet, and the chief of the laboratory, M. Grivollet.

In the Series of Apparatus and Instruments—Different patterns of forceps with parallel jaws by Professor Poinso, the latest improvement in which will be presented at the Congress ; elevators by MM. Martial, Lagrange, Lemerle, &c. ; hot air syringes heated by electricity, such as the ingenious ball-syringe of M. Barbe ; a new electric mallet by M. Gillard ; new patterns of nerve bristles by MM. Dubois, Godon, &c.

In the Mechanical-Work Series—An application of the hydraulic press to the swaging of plates by M. Poinso ; an apparatus for obtaining parallelism of pivots in bridge-work, of which you have spoken in your last number ; lastly, specimens of different kinds of bridge-work by MM. Chauvin, Barrié, Prével, &c.

Amongst the scientific works which touch on all the branches of dental art, one work deserves a place by itself, it is Professor Dubois' book, entitled *Therapeutics of Dental Caries* (2nd Edition).

The author has set forth in a very clear and concise manner all that which belongs to therapeutics proper, as well as operative dentistry. It is, in fact, a work which all students and practitioners will do well to consult.

In this already too long letter I have endeavoured to set forth before your readers a review, as exactly as possible, of the actual situation of dental art in France.

Those of our English brethren who intend to be present at our approaching International Dental Congress, and I hope they will be many, will find that they will thereby get well informed upon the subject of the organisation of our profession in our country, if they are not so already.

Concerning this Congress I have nothing special to add after having mentioned that Mr. Cunningham receives applications from every country, as does also the committee, and is occupying himself busily with the work of organization.

The chief objection which has been raised against the Congress

has been satisfactorily answered. The English Committee has just been settled upon, with Sir John Tomes as president, with a vice-president for Scotland and another for Ireland, and with Mr. Cunningham as secretary.

Thus our English brethren cannot but have reasons for coming to Paris in the month of September.

Some of our colleagues intend to be present at the Association Meeting at Brighton in August, as a delegation from the General Association of French Dentists, and to renew by word of mouth the invitation which has been addressed to the English profession. One member who hopes to form part of the delegation being

Your servant,

CH. GODON, D.E.D.P.,

Assistant-Director of the Dental School of Paris.

72, Bd. Haussmann.

Reports.

THE ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

THE Annual General Meeting of the Session 1889 (January to May) was held in the rooms of the Society in the new Dental Hospital premises, 5, Lauriston Lane, Edinburgh, on Friday, May 3rd. Dr. W. H. WILLIAMSON, the President, was in the chair, and, in opening the meeting, said that he had a peculiar pleasure in presiding at the first meeting of the Society in the new Dental Hospital, which opened with the fairest prospects before it. The beautifully lighted and admirably fitted-up filling room, in itself attracted attention, while there was plenty of other accommodation for the use of the school and also for the purposes of their meetings. He would not dilate further on the subject, as it would no doubt be fully discussed under more favourable circumstances in the evening.

On the proposal of Mr. MACGREGOR, seconded by Mr. WILSON, the following gentlemen (as recommended by the Council) were duly elected as office-bearers for the ensuing Session :—

PRESIDENT—John A. Biggs, L.D.S.

VICE-PRESIDENTS—J. Moore Lipscomb, L.D.S. and G. W. Watson, L.D.S.

TREASURER—James Mackintosh, Esq.

CURATOR AND LIBRARIAN—J. Stewart Durward, L.D.S.

SECRETARY—John S. Amoores, L.D.S.

COUNCIL—Walter Campbell, L.D.S., Rees Price, L.D.S., W. H. Williamson, M.D., J. Graham Munro, L.D.S.

Dr. SMITH said he had great pleasure in proposing a cordial vote of thanks to the retiring office-bearers of the Society for the efficient manner in which each one of them had discharged his duties during the past session. Their success was, no doubt, to them a reward in itself, but it was rather an insubstantial one, and he was sure the meeting would most heartily accord them the vote of thanks which he now moved.

The names of the following gentlemen, whose nomination for the membership of the Society had been approved by the Council, were then read by the Secretary :—Herbert Bycroft Ezard, L.D.S. Edin., 32, Buccleuch Place, Edinburgh ; Frederick Page, L.D.S. Edin., 6, Hope Street, Edinburgh ; John Turner, L.D.S. Edin., 60, Lauriston Place, Edinburgh ; John Girdwood, L.D.S. Edin., Patriothall House, Hamilton Place, Edinburgh ; Gordon Reid Shiach, L.D.S. Edin., 1, North Guildry Street, Elgin ; David Monroe, L.D.S. Edin., 3, Howe Street, Edinburgh ; James Leslie Fraser, L.D.S. Edin., Member British Dental Association, 5, Castle Street, Inverness ; John Stewart, L.D.S. Edin., 65, Queen Street, Edinburgh ; John Crostwhaite Macnamara, L.D.S. Edin., 1, Rankeillor Street, Edinburgh.

The TREASURER and CURATOR having read their reports, a short discussion ensued as to the future dates of meetings, and the matter was ultimately left in the hands of a special committee.

The PRESIDENT showed some thin Arthur discs, and also some very small corundum stones made by Taggart's instrument, which latter were specially useful for finishing fillings on coronal surfaces. He also showed the instruments used for the insertion of How's porcelain inlays, with specimens in natural teeth. At a previous meeting, they had been very much interested in Mr. Dall's paper on the subject. When it was read he rather took exception to the method employed, namely, making the inlaying so that close contact was only sought to be obtained at the outside edge of the cavity, while the free undercutting allowed a large body of cement underneath. Mr. Dall seemed to think that it was quite an easy matter to combine the colour of the cement and that of the piece of porcelain to produce a given shade, but he could not agree with him on that point. In his own experience he found that where especially English teeth were used, a greenish tint was produced in setting,

which tint belonged neither to the cement nor to the porcelain. He had noticed that Professor Miller of Berlin made the same observation in a paper on the subject, published in the *DENTAL RECORD*, about two years ago. Since the paper was read, he had put in several by How's plan, and it certainly seemed a very rational and practical one, giving very good results with comparative ease. The method was fully described in the August number of the *Cosmos*. Briefly stated, the principle of it is the reduction of all cavities to a circular form by means of one of a series of graduated round burs. The inlays are of three sizes and three shades, which approximate very well to most cases. One of these, a size larger than the bur used, is mounted on a mandrel and carefully reduced to size on a corundum wheel or slab by rotation, using the engine, until it can be placed in the cavity fitting the sides closely, and touching the floor of the cavity. Then a little nick is made in the upper and lower walls of the cavity and corresponding ones on the inlay, both of which are filled with soft phosphate cement, the rest of the inlay requiring only a slight smearing, and it is pressed into place and allowed to harden. The projecting portion is then ground down, and the whole polished in the usual way. One great advantage was the method of mounting and fitting the inlay, especially for the smaller cavities. A great part of the work could be done on a gauge of bone and vulcanite—preferably the former—which did away with the necessity of taking an impression, and also saved the constant trial in the patient's mouth. Another recommendation was the accurate fitting obtained, and the small amount of cement required for retention—a matter, he thought, of some importance in regard to colour, and especially as there need not be any cement on the floor of the cavity. Of course, it was only suitable for strictly labial cavities, and not available for those involving proximal surfaces.

Mr. ANDREW WILSON exhibited specimens of the jaws and teeth of the Sargus or sheepshead fish, making a few explanatory remarks upon their nature and structure.

Mr. GEORGE W. WATSON was then called upon for his paper on—

THE MICRO-ORGANISMS OF THE MOUTH AND THEIR ASSOCIATION WITH DISEASE.

After describing the principal characteristics of bacteria, and

touching upon their distribution, the reader proceeded to give Cohn's classification as follows :—

- 1 Sphærobacteria, globules, micrococci.
2. Microbacteria, short rods, bacterium.
3. Desmobacteria, long rods, bacillus vibrio.
4. Spirobacteria, spirals, spirochaeti, and spirillum.

To these might be added—Mucoidei, mould ; saccharomycetes, yeasts.

The methods of propagation, cultivation, &c., having been briefly referred to, Mr. Watson went on to say :—I shall now endeavour to show you, and describe, by means of lantern transparencies taken from my negatives, some of the different organisms which I have cultivated from the mouth, and also some slides taken from negatives lent me by my friend, Dr. Edington, whose kindness and help I hereby acknowledge.

Dr. Miller of Berlin separated out and described some twenty-five different organisms from the human mouth.

I shall commence with the organisms of caries :—

Slide 1—*Leptothrix buccalis* growing, from piece of carious dentine L, is a very common organism in the mouth. In caries it is found growing from the external surface of the tubules, and does not penetrate into the tubules until they are completely softened and broken up.

Slide 2—There are several different varieties of L, and this is one more slender and with longer filaments than that of *buccalis*, *leptothrix gigantea*, long rods, short rods, found in the mouths of dogs, sheep, cats, and other animals. Cruikshank, in his "Bacteriology," says that *leptothrix* is found in the mouth in the form of long rods, short rods, cocci, and spirilla, which assertion I very much doubt, more especially as this opinion is taken from some of the works of the older writers. It is very difficult to get a good growth of *leptothrix buccalis* for examination, but I hope to be able to do so, and report at some future time.

Slide 3—This slide represents very well chalky, carious enamel. Along with the broken up enamel prisms there are a few filaments of *leptothrix*, but no other organisms are present, which accords with what Dr. Miller says in regard to this.

Slide 4—Organisms grown from deepest layer of carious dentine. With a sterilised instrument the outer layers of carious tissue was rapidly removed till nearly sound tissue was reached. Some of this

was put into a tube of nutrient jelly, and incubated on the third day. The tube was found swarming with leptothrix and micrococci, with liquefaction of jelly, degeneration of growth taking place on second week. As liquefaction of the jelly goes on the organisms all fall to the bottom of liquid area.

Slide 5—Micrococcus pure culture separated from above.

Slide 6—Section of carious dentine exhibiting tubules packed and distended with micro-organisms.

Slide 7—Same, more highly magnified. The organisms which penetrate the tubules are principally micrococci, though sometimes bacilli and spirilla are found, but never leptothrix. Before micro-organisms can gain admission to the tubules decalcification must have taken place, and this is readily accomplished at weak points of the teeth by means of the numerous ferment organisms found in the mouth.

I quite agreed with Dr. Miller that there are areas of softened non-infected dentine which contain no organisms.

Dr. Miller of Berlin, in his article on dental caries, says that he has been able to produce this condition artificially on sections of sound teeth put into beef extract and sugar, and inoculated with a pure culture of the organisms from caries. The probability is that this is quite correct, as Dr. Miller has done very good and thorough work in the investigation of the organisms of the mouth; at the same time his experiments have not been confirmed by other investigators. Whenever I can find time and opportunity I hope to take this subject up. There is not the slightest doubt that dental caries can to a considerable extent be kept down by keeping the mouth in a thoroughly clean and aseptic condition—but I shall refer to this further on.

Slide 8—Bacteria grown from scrapings of tongue.

Slide 9—Two epithelial scales from tongue covered with the same organisms, in chains and singly.

Slide 10, 11, 12, 13—This series of slides shows well the variety of micro-organisms found in mouths where no attention to cleanliness is paid. Bacilli, micrococci, bacteria, spirilla, and leptothrix are all present.

Slide 14—Colony of bacilli cultivated from pus taken from root of tooth.

Slide 15—*Streptococcus pyogenes*.—This is the special organism of suppuration, inoculation with this organism causing the develop-

ment of an abscess. Improperly cleaned instruments, you can therefore understand, might be productive in the mouth of severe abscess if used on other patients—or more serious results. *Streptococcus erysipelas*, also pathogenic.

Slide 16—*Saccharomyces albicans* or *oidium albicans*.

Slide 17—One of the yeasts is the organism associated with thrush in the mouth of infants or debilitated subjects. The mucous membrane is covered with greyish white patches, consisting of epithelial cells, this fungus, and the mycelia of moulds. Spore formation is well shown in one of the slides. The preparation from which this photo-micrograph was taken was obtained from the throat of a patient suffering from phthisis. Associated with ulcerative stomatitis, there is found a bacillus, which seems to have a great deal to do with the spreading of the disease in calves, rabbits, and mice. It usually proves fatal, owing to the rapid development of the bacillus invading all the important organs.

After showing several other slides illustrating organisms associated with various diseases, the paper was concluded in the following words :—

The presence in the mouth of such numbers of microbes, many of which are pathogenic, suggests to us the possibility of infection from such organisms after tooth extraction by means of the open wounds, and may account for some of those cases of obscure inflammatory after-trouble which we sometimes come across. I make a point of recommending all patients, after the removal of several teeth, to use a powerful antiseptic mouth-wash in view of this. More particularly should this be attended to in the case of debilitated subjects with a tubercular tendency, as the open wounds would form a good medium for the development and growth of tubercle bacilli. Gangrene of the lungs, chronic pyæmia, abscesses of throat and mouth, &c., have by various authors been ascribed to the action of the micro-organisms of the mouth. Dr. Miller mentions that he has been able to produce septicæmia in rabbits and mice, by injecting into the lung saliva from the mouth of a perfectly healthy person. This, of course, is due to the organisms micrococci, &c., in the saliva, or to some of their products, ptomaines. To keep the mouth in a thoroughly healthy condition, all roots and teeth that cannot be filled should be removed, as they form sources of infection, and the teeth should be thoroughly brushed with a tooth-powder having antacid and antiseptic properties. Just before going to bed is perhaps the

best time to do this, as during sleep the mouth is at rest, and fermentation in active progress, especially between the teeth where food is most likely to lodge. By the diligent use of antiseptics, and silk threads passed between the teeth, the mouth can be kept comparatively free from microbes.

The point to consider now is, which antiseptic is best for our purpose? Mercuric chloride is by many considered the best antiseptic, but for use in the mouth it is both very poisonous and disagreeable, as well as not being very stable. When mercuric chloride, especially strong solutions, comes in contact with albumen it unites with the sulphur to form mercuric sulphide, which is perfectly useless as an antiseptic. As for carbolic acid, it has been experimentally proved to be too feeble and insufficient, as it takes one or two days for a 5 per cent. solution of carbolic to destroy the spores of anthrax.

Dry heat is a valuable antiseptic, and is extremely useful in the treatment of teeth with putrid canals when immediate root-filling is carried out.

Dr. Edington has investigated the antiseptic germicidal and bacteriacidal properties of hydronaphthol, one of the coal-tar derivatives. This he has done very thoroughly, with the result that it proves to be the most valuable antiseptic we have. It is soluble in cold water in the proportion of 1 in 1100, which is stronger than 1:1000 mercuric chloride. It is soluble in hot water in the proportion of 1 in 300, and mixes in any proportion with glycerine. It is not poisonous, has a pleasant odour, and can be used full strength, if necessary, without any bad result. I have been using a 10 per cent. solution of hydronaphthol for some little time for the treatment of putrid conditions, &c., and find it better than any antiseptic yet tried. The proprietors are making up, specially for dental purposes, tooth powder containing 5 per cent. of the antiseptic, a mouth-wash, a 10 per cent. solution, and cotton wool, specimens of which I hand round for inspection.

The PRESIDENT, in moving a vote of thanks to Mr. Watson, said that it should be a very special and hearty one, as they were under great obligations to him for the trouble taken in preparing the paper, a great part of the work being done during convalescence from a severe and tedious illness. The annual meeting was not favourable to discussion, as the time was limited, but he hoped that the subject in some form or another would be taken up in the next session.

He had no retiring address to make, but would thank the Council,

and especially the Secretary, for carrying through the work of the Society. He regretted that Mr. Macgregor did not see his way to undertake the further responsibilities of office by accepting the presidential chair in due course, but, such being the case, he was glad to welcome to it Mr. BIGGS of Glasgow, who had always been one of their most active and energetic members.

The PRESIDENT then retired in Mr. BIGGS's favour, who, on taking the chair, made a few remarks, thanking the members for the high position of honour in which they had placed him, and assuring them that he would spare no pains or trouble to fulfil the duties which would fall to his lot, and do all in his power to promote the interests and welfare of the Society.

In the evening the members of the Society and the L.D.S. dined together in the Balmoral Hotel—Sir DOUGLAS MACLAGAN presiding. There were thirty-four present.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

THE last Ordinary Monthly Meeting of this Society was held on Friday, June 7th, 1889, at 8 o'clock p.m., Mr. SIDNEY SPOKES, President, in the chair.

The minutes of the previous meeting were read and confirmed. Miss DAY signed the Obligation Book, and was formally admitted as a Member by the President.

Mr. G. LEVERS and Mrs. VAN LOENEN were present as visitors.

Casual Communications:—Mr. ALLNUTT asked whether it would be advisable to inject cocaine in an insane person. A discussion on cocaine took place, in which Messrs. FISK, E. C. CLARK, DUNLOP and the PRESIDENT took part.

Mr. E. C. FISK showed a case of fibroma extending from the canines to first molars on left upper side. It was removed by him, and treated with ethylate of sodium, but as the hæmorrhage was so extreme, he was obliged to use the actual cautery, which brought about the desired result. Also that for some time past, he had dispensed with the mouth-prop in gas cases. Patients were simply told to keep the mouth wide open, the result being that five out of every six cases were eminently successful.

Mr. CLARK mentioned a case of gum-boil posterior to an apparently dead second upper bicuspid, arising from the first ditto stump. Also another case of abscess after extraction of a lower molar.

No more *Casual Communications* coming forward, the PRESIDENT called upon Mr. E. C. FISK for his paper on

DENTAL EDUCATION.

Mr. PRESIDENT and GENTLEMEN,—My object in reading this paper is more with the intention of promoting discussion than of giving you any fresh information regarding Dental Education, for I certainly think that some alteration is necessary ; and I have therefore briefly noted a few points in which I think improvement could be made.

When I was going through my dental curriculum, I could not help comparing the difficulties which a dental student has to surmount, and the value he receives in return for his labour and money ; with the position of a medical student.

As you are aware, the first thing after the preliminary examination, the dental student has to spend three years in acquiring a knowledge of that which is most important to him in after years, namely, dental mechanics. This over, two years have to be passed in medical and dental schools, receiving instruction in anatomy, medicine, surgery, &c., and the special subjects of his own profession. After this is done, and he has passed his examination and received the diploma from the Royal College of Surgeons, he is launched upon the world to fight his way, much in the same condition as a young girl who has just left a finishing school, and who has been taught French, German, and other lady-like accomplishments, and has a general idea of the rudiments of those subjects, but is unable to ask in any language but her own for the common necessities of life, and whose musical attainments are confined to the "Maiden's Prayer" and such like pieces. I do not mean to say that he knows nothing of his profession, but I am convinced that after the student has obtained the L.D.S., and started in practice, he will soon find out that he has quite as much to learn, and still more to unlearn.

While he is at a dental hospital he is taught to remove, and to fill teeth, but has very few opportunities of seeing the rarer cases, such as fractured jaws, tumours, &c., &c. Therefore, in after life, should any case present itself outside the usual routine, he has either to consult a general practitioner or send the case to a general hospital, he knowing little about it, being unfit to treat, besides being somewhat hazy as to the position of vessels, nerves, &c., that would be in his way should an operation become necessary.

The question therefore, which arises is—whether this result is the fault of the man or the fault of his teaching? In reply, I assert most emphatically that the teaching is at fault. I will now show how impossible it is for the student to acquire a thorough knowledge of his profession in the shortest possible time as laid down by the College. For this purpose I have arranged a few tables showing how the student is expected to employ his time during the various sessions.

Imagine a student just entering the schools. By referring to this table you will see that the day commences with the study of the science of physiology. After hearing of the magic rhythm of the heart's beat, the composition of bile or other matters connected with this science, he has then to trot off to the Dental Hospital where he will be engaged in either filling or removing teeth. The next hour is devoted to the more satisfying and pleasing task of preparing for the more arduous duties of the remainder of the day by laying in a foundation in the shape of a good meal.

No doubt during his dental work he has forgotten a great deal of the subject matter of his previous lecture. At two o'clock he commences dissecting, but however fascinating the subject may have become to him, he must hurry off at three to the chemical theatre, where his brain is still further bewildered with equations and complex formulæ, such as:— $C_3 H_5 3C_{18} H_{33} O_2$, which you all know is the formula of olive oil. At four, the scene must again change, and he has now to return to the subject of anatomy, where the complex forms, variations and relations of the cervical and solar plexuses, Meckel's ganglion, and the contents and boundaries of the ischio-rectal fossa or other parts of our delightfully simple human frame drive from his muddled brain most of that which had been hitherto retained of the aforesaid formulæ.

The student is then allowed an hour's breathing space, after which he must rush off to imbibe from the pleasing eloquence of Mr. Spokes, the peculiarities of dentition of the well known bony pike of North America, kangaroos, snakes and other interesting creatures, which for my own part I often wished were in a place which shall be nameless.

This lecture over, you would think that the student had had enough crowded into his brain for one day and might now indulge in a little relaxation, but alas! no! he is now destined to endure a lecture on operative dental surgery, which may possibly only last an hour, but which has been known to extend to two.

The lectures of the day are now ended and the student returns home, and, having been advised to devote his spare time to reading, gazes with dismay upon his books, feeling sick at heart at the prospect of the task before him, and communes with himself as to which subject he shall tackle first. After reading for a length of time, which varies according to the student's thirst for knowledge, he retires for the night—I was about to say "to rest," but such is not often the case, for his overtasked brain still tries, in dreams, to solve the various problems and difficulties which have been troubling him during the day.

This day's work is but a type of what is going on throughout the dental students' educational career. Therefore, can we consider their complaint of being overworked unreasonable? To this question I think there can only be one answer.

This continual overcramming and overcrowding of such a diversity of subjects into the student's head is continued day after day, and week after week, throughout the various sessions.

During the second winter the subjects of physiology and chemistry give way to the more difficult subjects of general surgery and medicine. By referring to the table you will see that it is well nigh impossible to gain a thorough knowledge of general surgery, owing to the little time at his disposal for ward and out-patients' work. It is equally impossible to learn surgery from lectures and reading, as it is to acquire the necessary skill for filling teeth without practical teaching. This, I think, will account for the dislike which the dental student has for the surgical part of the examination, and the difficulty which he has in satisfying the examiners in this particular subject.

In the dental curriculum there are far too many subjects, lectures, and demonstrations to get up, and attend. Supposing some very energetic student were to attend all the lectures and demonstrations that are in the course, he would have to sit, in round numbers, about 890 hours, or were he to sit continuously for eight hours per day until the whole of the lectures, &c., were finished, it would take him in all, four months, two weeks, and two days to complete them all.

Taking into consideration the dental curriculum and the fees that have to be paid, I would strongly advise that a medical qualification should be first obtained, as it would add to his social status, and patients would not be so chary in coming to him with the rarer cases.

A medical qualification, too, would be of great service in practice ; the medical men in the neighbourhood would be more likely to send patients to a dentist holding a medical qualification than to an L.D.S. only. Indeed, it would be to their interest to do so, as otherwise the surgeon practising dentistry would be inclined to go into general practice, and thus competition would be rendered keener amongst them. Again, there are many other advantages in holding a medical qualification, which are obvious and need only now be slightly entered into.

For instance, patients would have greater confidence, and would not ask the questions which they so often put, such as :—" Would it not be better for them to consult a doctor as to whether it is safe for them to take gas ? " or again :—" Whether you give the gas without a doctor being present ? " Very few patients know anything of a L.D.S. qualification, or the work that has to be done to obtain it, but all seem to understand the difference between a doctor and a dentist, or such questions would not be asked.

Again, it would be of great service in obtaining appointments.

The difference in the amount of fees between the two qualifications is very little. In working for the L.D.S. the student covers most of the ground required for the conjoint physician and surgeon.

From another point of view, namely, as a speculation, it would be advisable, because the extra outlay of money and time would be small, as I will now endeavour to show. The cost of a dental education may be roughly stated at £185, whilst on the other hand that of a medical is only about £159 10s. The difference in money if you wish to obtain the medical in addition to the dental qualification would amount to an outlay of only about £50 extra. The following are the various fees required for both qualifications.

MEDICAL FEES.

					£	s.	d.
Composition Fee	...	...	...	...	100	0	0
Instruments...	...	...	...	...	10	0	0
Books	...	...	...	...	8	0	0
Parts for Dissection	...	...	...	...	3	0	0
Subscriptions	...	...	...	...	2	0	0
Registration...	..	...	...	...	5	0	0
Examination	...	...	...	...	31	10	0

Making a total of ... £159 10 0

DENTAL FEES.

					£	s.	d.
Pupil's Premium	...	...	...	...	63	0	0
General Hospital	...	...	...	...	42	0	0
Dental Hospital	...	...	...	...	25	10	0
Dental Instruments	...	...	...	...	25	0	0
Books ...	...	...	...	...	10	0	0
Parts for Dissection	...	...	...	...	2	0	0
Subscriptions...	...	...	...	...	2	0	0
Registration	...	...	...	...	5	0	0
Examination	...	...	...	...	10	10	0
Making a total of					£185	0	0

This calculation is given in round numbers; the amount of course varies according to the school chosen.

With regard to obtaining a practice the dentist is greatly handicapped. After spending this large sum (and we must also take into consideration the length of time he has devoted to the purposes of study) he starts in practice, and fondly hopes that patients will flock in numbers to consult him. But how many of the general public know the difference between the L.D.S. and the R.D.S. They will naturally go to a cheap man; and a qualified man cannot afford to work at the low fees the R.D.S. man is satisfied with. How is he to get together a practice? He cannot advertise, and people are afraid to consult him because they fear he is too expensive. In many cases an advertising man has a practice close by, and is also often a sound practical man into the bargain.

Of course, where the beginner has money and can afford to wait, he can push on; but otherwise his lot is too often a long and weary struggle for many years before he can secure a firm footing.

I certainly think that more protection should be afforded to men holding diplomas, and that our leading societies and associations should take the necessary steps to let the public know the difference between the licentiate, and the man who chooses whatever combination of letters he thinks needful to tack on to his name. Of course this applies almost entirely to the suburban and provincial men, and not to the great guns practising in the neighbourhood of Cavendish Square, and other like places.

Now, Gentlemen, as you probably gather, my pet theory is, that a dentist should take a medical qualification in addition to the dental,

but that, of course, rests entirely with himself. I do not think, therefore, that the curriculum needs much alteration for men going in for the double. But for those who only purpose taking the L.D.S., I should like to see the subjects of both medicine and general materia medica entirely withdrawn from the course, these subjects being of no service whatever to him in a dental practice. The knowledge of the special materia medica that concerns him as a dentist he obtains at a dental school. The time that would be gained by the withdrawal of these subjects could then be devoted to acquiring a better knowledge of that which is most important to him in his after career—namely, practical work.

The student is quite aware that he will not be examined in these subjects, and therefore does nothing but grumble at the hardship in having to attend the lectures, and in the majority of cases does not make the slightest attempt to acquire a knowledge of either subject.

With regard to appointments held by students in a dental school, I think that there should be two assistant house surgeons and an assistant demonstrator; and in the event of there being a laboratory attached to the school, an assistant demonstrator of that department also. These appointments should be looked upon as prizes, and should be held for a limited time only, say six months; and there should in every case, as in medical schools, be competitive examinations for each appointment.

This I think would stimulate the men to do good work, and make them more anxious to outrival one another than is the case at present.

With regard to the examination, I consider it, as at present conducted, simply a farcical one. It is supposed to be practical, but is it so? I certainly do not consider the putting in of a gold filling, and *attempting* to diagnose cases which the student has not had in all probability a chance of seeing during the curriculum, and also giving off hand treatment of a few regulation cases, a practical examination of a man's capabilities; especially when we take into consideration the amount of work crowded into the course.

As the curriculum stands at present, I think the examination should consist in the practical part of operative and mechanical work. The candidate should be required to remove at least a dozen teeth from the jaws of as many patients; this to be followed by half a dozen gas cases. He should then be required to administer gas to

several cases, another man performing the extraction ; this would tend to show his capabilities in both extraction and gas administration.

The filling need not necessarily be of gold, as I am of opinion that more skill is necessary to make a perfect osteo, or Jacob's gutta-percha plug, than for an average gold filling. We know perfectly well that provided we correctly shape our cavities, keep them dry, and anneal the gold, nothing will prevent its adherence ; of course care must be used in filling with gold as with any other material, but I do not think that more than that is necessary.

A few hours should be devoted to mechanical work, which should consist of some of the following items :—Casting plaster and zinc models, with their counter dies, striking plates, fitting teeth, modelling, packing, &c., &c.

I should like to see the examination in two parts—a primary, and a final. The student would know something of chemistry if he had to satisfy an examiner in that subject. At present all he thinks of is how few lectures he can scrape through with. As for learning any of the stuff, he laughs at the idea. He will tell you that he has quite enough to learn as it is without getting up matter he is not examined in, yet at the same time he would find a little chemistry very useful to him afterwards.

I would submit that the primary examination should consist of the following:—

- I. Chemistry.
- II. Histology and Physiology.
- III. Special Materia Medica.
- IV. Metallurgy.
- V. Osteology.

The Final :—I. General Anatomy.

- II. General Surgery.
- III. Dental Anatomy.
- IV. Dental Surgery.
- V. Practical Work.

The primary examination might take place at the end of the first winter session.

Gentlemen, in conclusion I can only repeat that my object in reading this paper has not been to give you any fresh information, but simply to open ground for discussion on what I consider a very

important question. If I succeed in this I shall feel that I have attained the object aimed at in my paper.

A discussion was opened on the paper, in which Messrs. T. G. READ, CLARK, PERKS, ALLNUTT, DUNLOP, MISS DAY and PRESAT took part. After which Mr. FISK replied to various remarks, and was heartily thanked, and the meeting was adjourned till Friday October 11th, 1889.

CHARING CROSS HOSPITAL.

THE annual distribution of prizes to the students in connection with the Charing Cross Hospital Medical School, took place in that Institution on Thursday afternoon, July 3rd, Lord de L'ISLE and DUDLEY presiding. He was supported by the lecturers, and a goodly company was present. After the reading of the report by the sub-dean, his Lordship presented the medals, prizes and certificates. It is particularly gratifying to find, that our dental students distinguish themselves so well on these occasions as is demonstrated year by year by the list of awards.

Out of twenty-three first prizes and scholarships, no less than eleven were obtained by dental students, while to them, also, were given 24 per cent. of the certificates.

It is invidious to make any distinctions, but the remarkable success of Mr. A. W. W. Hoffman deserves notice. This gentleman received four first prizes, viz., Anatomy, Physiology, Practical Physiology, and Materia Medica, and he is to be congratulated on the brilliant result of his work. Messrs. T. E. Constant and A. Hopewell Smith tied for the "Pereira" Prize, and Messrs. J. F. Colyer, J. H. Day, W. R. Barrett, J. A. Mallett and E. Preedy took first honours in their various classes. This is as it should be; and we are glad to believe that, while our men are diligent and skilful in their dental studies, they do not neglect to take the *spolia optima* offered to them in the classes of the schools attached to general hospitals.

CONVERSAZIONE AT THE DENTAL HOSPITAL OF LONDON.

THE annual *conversazione* and prize distribution in connection with the above hospital and school took place under favourable circumstances on Wednesday, July 17th. The attendance was, as usual, very good, but the arrangements were somewhat conducive to

crushing, especially in the *attempts* at procuring refreshments. The guests were received by Sir John Tomes, whose genial presence lent much attraction to the proceedings. The formal meeting for the distribution of prizes took place in the theatre, which was prettily decorated for the occasion.

The Dean, Mr. MORTON SMALE, having read his report, which was satisfactory in every way, the prizes were distributed to the successful students by Lord Kinnaird. The following is the

LIST OF PRIZE WINNERS.

Saunders Scholar, Mr. A. W. W. Hoffman ; *Ashs' prize* (given by Messrs. Ash & Sons), Mr. K. Schelling ; Certificates, Messrs. J. H. Day and A. W. W. Hoffman.

CLASS PRIZES, WINTER SESSION, 1888-9.

Mechanical Dentistry.—1st Prize, Mr. J. H. Day ; 2nd Prize, Mr. A. W. W. Hoffman. Certificates, Messrs. C. F. Badcock, J. Dunlop, and V. Knowles.

Metallurgy.—1st Prize, Mr. A. W. W. Hoffman ; 2nd Prize, Mr. C. S. Bright. Certificates, Messrs. J. A. Mallet and J. H. Day.

Prize in Operative Dental Surgery.—1st Prize, Mr. J. B. Hordern ; 2nd Prize, Mr. G. G. Spray ; Certificates, Messrs. F. Burton and J. Dunlop.

CLASS PRIZES, SUMMER SESSION, 1889.

Dental Anatomy.—1st Prize, Mr. A. W. W. Hoffman ; 2nd Prize, Mr. E. J. Preedy. Certificates, Messrs. W. May, J. H. Day, and K. Schelling.

Dental Surgery.—1st Prize, Mr. A. W. W. Hoffman ; 2nd Prize, Mr. E. J. Preedy. Certificates, Messrs. E. R. Bull, T. Coysh, L. C. Tomlyn, and J. H. Day.

Students' Society Prize.—Mr. F. A. Harsant.

After the distribution Lord Kinnaird gave an address, in which he touched upon the advantages and disadvantages of the competitive system, warmly urging those who had been unsuccessful not to be discouraged. A vote of thanks to his Lordship for presiding, was proposed by Mr. SIBLEY and seconded by Sir JOHN TOMES.

The rest of the evening was devoted to a capital exhibition of Edison's phonograph, a selection from "Trial by Jury," by members of the Hospital Musical Society, and songs by Mr. David Hepburn, Mr. Alfred Smith, and Mr. W. H. Wheatley. Mr. Stanley Bright acted in his usual efficient manner as accompanist. The programme

announced that the "Hospital Band" would play at intervals during the evening. Their performances were highly appreciated and loudly applauded, whilst the particular form of music which they discoursed not only "soothed" but also tickled the—we were going to say "savage"—"breasts" of those present. We hope to hear more of the band which, we are afraid, will be inundated with engagements.

EXTRACTS.

THIOCAMF.

WITH regard to the new disinfectant material "thiocamf" we append a copy of Professor Emerson Reynolds' remarks at the last meeting of the Royal Dublin Society, which may not be without interest to our readers. He said :—"Since writing the chapter on Disinfection in the *Manual of Public Health for Ireland* I have sought some simpler means than is there recommended for disinfection of rooms, so that any intelligent person could attain the end in view without risk of fire, without the use of corrosive materials, or of large quantities of any agents, and without involving the presence of the operator in the room, or the employment of special apparatus. This search has been successful, and I have now the pleasure of bringing under your notice the singular liquid which fulfils the conditions I have just specified, and to which the name of 'thiocamf' has been given. The basis of this novel disinfectant is a very curious liquid which results when sulphur dioxide gas is brought in contact with camphor. At ordinary temperatures the gas alone requires a pressure of more than two atmospheres to liquefy it ; but camphor, owing to chemical attraction, can liquefy the sulphur dioxide gas without any pressure whatever. In this liquid are dissolved several powerful substances, but I am not free to enter into further particulars as the patent specification for thiocamf has not yet been published. A quantity of the liquid has been preserved in my laboratory for nearly two years in a corked bottle, and has not undergone sensible alteration during that time.

"Thiocamf possesses almost unique properties, for while it can be preserved without pressure in ordinary bottles at mean temperature, mere exposure of the liquid in a thin layer to the air determines the steady evolution of relatively enormous volumes of sulphur dioxide gas from it, charged with the vapours of other powerful

disinfectants. These gases and vapour diffuse through the whole of the air of a well-closed room, and therefore must reach everything in the room if given reasonable time. The question then arises whether the sulphur dioxide gas can destroy the bacteria, particularly infective forms, when it reaches them. The evidence on this point has hitherto been of a rather loose kind, though the results lead to the conclusion that sulphur dioxide gas is a powerful bactericide. Happily the truth of this conclusion has now been placed beyond doubt by a critical investigation of the subject aided by modern methods of bacteriological study. This examination has been carried out in Paris by MM. Dubief and Bruhl, under the direction of Dr. Dujardin Beaumetz, and the results have been recently communicated to the Academy of Sciences. Starting with air rich in germs, and combining Miguel's methods of numbering the bacteria with alkaline culture, Dubief and Bruhl found that the germs were always reduced in number after the action of dilute sulphur dioxide gas; therefore the latter destroyed the vitality of the germs. It was further found that the number destroyed increased with the duration of the action of the gas, and that this destructive action was accelerated when the humidity of the air was increased. In all the experiments with the rather dilute sulphur dioxide gas used the latter proved particularly fatal to micrococci and allied bacteria, whether diffused through the air of a chamber or attached to its walls. As these are organisms of the class which true disinfection seeks to destroy, this testimony to the value of sulphur dioxide is of exceptional importance. Lastly, these investigations have shown that sulphur dioxide gas is a true bactericide even in a dry state, though longer time is then required for the production of its full effect.

“The bearing of these results on the value of thiocamf is obvious, for if sulphur dioxide gas alone be so powerful a bactericide, the mixture of sulphur dioxide with vapours of other disinfectants of acknowledged value is a combination of exceptional power. Moreover, there is no material that I know of except thiocamf which can give off so large a relative volume of sulphur dioxide gas (the contents of a small six-ounce bottle can afford over 20,000 cubic centimètres) without any special treatment save exposure in a very thin layer on an old tray or dish to the air of a room to be disinfected. Further, one ounce of thiocamf shaken up with a quart of water forms a powerful disinfectant for ordinary purposes, such as sprinkling over various matters, purifying drains, etc.; while a still more dilute

solution (one ounce to a gallon) can be used for soaking clothes which have been in contact with infected persons. The residue of thiocamf has a pleasant aromatic odour.

"This concentrated disinfectant can now be produced at a cheap rate, and an apparatus has been erected for its manufacture which can afford several hundredweight of thiocamf per week."

THE PREPARATION OF ROOTS FOR ARTIFICIAL CROWNS.

By Dr. L. C. WASSON, Topeka, Kansas.

Read at the Eighteenth Annual Meeting of the Kansas State Dental Association, Topeka, May 1, 1889.

GENTLEMEN,—Upon receipt of the programme a few days ago, I was surprised to find myself billed for an essay upon "The Preparation of Roots for Artificial Crowns." I had nearly completed a paper upon "The Logan Crown, and the Manner of Mounting It with a Swaged Band," supposing that to be the subject the committee desired me to write upon, especially as I was to give a clinic upon the Logan Crown and had given the committee to understand that I would prepare a paper upon that subject. To avoid the confusion which must necessarily follow a change of programme, I have somewhat hastily prepared a new paper upon the subject announced in the programme.

To begin with, let me say that I do not expect to shed any new light upon this subject, nor do I claim that there is anything new or original in my methods; therefore I can hardly expect to interest those of you who have given the subject of crown-work any special attention, though I hope my presentation of the subject may elicit such discussion among you as will result in great good to all. We have with us some gentlemen who have had a large experience in this branch of the dental art, and who have been eminently successful. If I can succeed in drawing from them the knowledge that I know they possess upon this subject, and how gained from experience, I shall feel well paid for my effort.

Most of you have given the subject of crown-work some attention. Some have succeeded, others have met with indifferent success or failure, and another class have never made any attempts to get out of the ruts and beaten paths of the past, but are content to plod along doing as they always did; whenever they meet with a difficult case, where there is an opportunity for the exercise of skill, they

unblushingly condemn it and resort to the use of the forceps, thereby hiding their ignorance from their too confiding victim. Thus thousands of teeth are annually sacrificed that might be made useful by the exercise of a little skill on the part of the dentist.

Gentlemen, this is wrong—it is worse than wrong, it is a sin and a shame to destroy the dental organs of our patrons as is done by many who claim to be dentists. We owe it to ourselves as professional men, as well as to our patrons, to keep up with the waggon of progress and give our patrons the best service possible, and he who contents himself with less is unworthy the name. The public are fast learning that there are better methods coming into use, and they are not going to tamely submit to the extraction of their dental organs when they can be saved. If you are not qualified to do such work, your patrons will go to men who are. The successful dentist of the future has got to keep up with the march of progress.

The time was when, if we found teeth that we could not successfully fill, it was good practice to recommend their extraction and the insertion of artificial ones in their place; but that day has gone by. Crown-work has made a new departure, and very much to the satisfaction of a larger per cent. of our patrons, too. Of course it is not possible to successfully crown every case that presents itself. You must use care and discretion in the selection of your cases. Only such roots as are firm in the alveolar process, or can be made so by treatment, will give satisfactory results. The preparatory treatment of roots for crown-work includes the bringing about of the healthiest possible condition in the roots and surrounding parts, as the cure of existing lesions, the removal of calculi, and such measures as shall prevent the recurrence of old troubles or the inception of new ones.

I shall not speak of the preparatory treatment of the natural roots for the final operation of closing the foramen, on account of lack of time, though I would not have you think this a matter of minor importance. It is of the most vital moment that all roots should be put in the most thorough aseptic condition possible before crowning them, as the ultimate success of crown work depends largely upon the thoroughness of these preliminary operations.

When a root has been put in the condition above described, it is ready for the final operation of closing the foramen. This may be done in the following manner:—With an adjustable gauge on a canal explorer measure the root through its canal, from the cervical opening to its apical foramen, after which thoroughly dry the canal

with warm air and close the foramen. This, I think, is most satisfactorily done with gutta-percha, though if the canals are very small, crooked, or difficult of access, I sometimes dip a few shreds of cotton in a creamy solution of gutta-percha cut with chloroform, and, after squeezing out the surplus, gently carry it to the end of the root on the point of a canal explorer, being extremely careful not to force air through the foramen. In this manner you can effectually close the foramen, and the cotton, when so treated, is practically indestructible; and it has the further advantage of being easily removed should occasion ever require it. This being done, the remaining portion of the canal should be filled with gutta-percha, oxyphosphate, or any other material preferred, remembering, of course, to leave sufficient room for the post if a porcelain crown is to be used.

I would next proceed with the preparation of the stump; and here, gentlemen, let me say, is the rock that has dashed to destruction the fond hopes of many an adventurer in crown work. It matters not how well you may perform every other part of the work, your work will have been in vain. I have seen more men fail in crown-work from a faulty preparation of the stump than from all other causes.

The principle governing the process of shaping the natural roots for any style of crown with a collar is practically the same. The neck or cervical portion of the root must have longitudinally parallel sides gauged to the line of the periphery.

Such a form is necessary in order to secure a perfect adaptation of the collar, because you are working upon the base of a cone. I first remove the crown, or so much as is necessary for the proper adjustment of the artificial crown. For this purpose I use a coarse safe-sided corundum wheel, though it is sometimes preferable, especially in the posterior teeth, to take a spear pointed drill and make a succession of holes around the crown and then cut between them with a fissure-bur, using the corundum wheel only to smooth up the work.

The excising forcep I seldom ever use, as I believe it productive of great injury. The approximal surfaces of the root to be crowned should next be made straight and parallel with the line of the root from its base to a point as deep as the collar is to be placed. For this purpose I use the approximal trimmers, sand paper discs, corundum points; and the labial and palatal portions of the root should be trimmed in the same manner. Careful study of the different forms of crowns and roots and their anatomical structure

will greatly aid the dentist in this very particular part of the work. He should so familiarize himself with the generic tooth-forms that when a case is presented he knows intuitively what its hidden outlines are.

If it is desirable to press the gum away from the root, it may be easily done by packing gutta-percha into the pulp-chamber in sufficient quantity to extend over the sides and impinge slightly upon the membranes, when it should be left two or three days. This plan will often greatly simplify the fitting of a collar in setting porcelain crowns; my usual practice is to grind the root on the labial side just a trifle below the margin of the gum, but on the palatal side I leave the stump standing a little above the margin of the gum. In this manner you increase the bearing surface of the crown, thereby adding to its strength and beauty, because you are enabled to hide your joint or if you use a band make it less conspicuous.

But on the molars or bicuspid when I use an all-gold crown, I invariably leave all the natural crown standing possible, as it gives a form of support to the gold crown not attained in any other way.

I might go on almost indefinitely speaking upon this subject, as it is almost an endless one, but I fancy the time will be better spent in discussing it than listening to me further. I will therefore close by thanking you, gentlemen, for your very courteous attention.—
Western Dental Journal.

CAMPHO-PHÉNIQUE.

By J. FOSTER FLAGG, D.D.S., Philadelphia, Pa.

THE rapidly-developing importance of this peculiar combination of carbolic acid and camphor impels me to a presentation of its especial claims as, probably, the most remarkable medicament which as ever been offered in connection with dental therapeutics.

When it is known that it is a notable germicide, an efficient antiseptic, a non-irritant, a decided local anæsthetic, non-poisonous, insoluble in water or glycerine, does not discolour or stain, is possessed of an agreeable odour and not disagreeable taste, and maintains an unchanged integrity, it will at once be recognized as wonderfully adapted to a large proportion of all dento-pathological conditions, from sensitivity of dentine, through the varying conditions of pulp-irritation, pulp-devitalization, pericemental irritation, alveolar abscess, and caries or necrosis of contiguous osseous structure, and that thus

it must rank as one of the most, if not *the most valuable* polychrest which dentistry possesses.

During the past session of the college with which I am connected (since September, 1888) I have availed myself of the extended opportunities afforded for a decisive clinical record of this material, and the results have been so gratifying that it is with much satisfaction that I present its claims to recognition and urge a prompt acceptance of the many benefits it has to bestow.

Where cotton is indicated as a wedge, and especially where marked sensitivity of dentine exists in connection with such cavities between teeth, both the discomfort attending separating and the pain attendant upon subsequent preparation of cavities are largely, and frequently completely, abrogated.

In cases of pulp-irritation, even of severe grade, its application, upon cotton, will almost invariably demonstrate its high rank as a "pain obtundent."

In devitalization of pulps its use as the menstruum for the arsenic and acetate of morphia in our "devitalizing paste" seems to have already given evidence of its value as a local anæsthetic in that connection. As a disinfectant of tissue surrounding pulp cavities and canals which have contained putrescent pulps it has made an excellent record, and has proven itself, by its variety of peculiarly acceptable attributes, to be one of the very best applications we have ever had for the purpose.

As a medicament, or ingredient of medicaments, for canal-dressings, either temporary or *permanent*, upon cotton, its combined characteristics of *antiseptis* and *insolubility* must command favourable recognition.

As an antiphlogistic in the earlier stages of sthenic pericementitis, applied upon the gum with small pads of muslin and renewed with *only desirable infrequency*, it has oftentimes been able to produce the attempted resolution; and, in cases where this was found impossible, to largely mitigate the suffering attending the induction of suppuration.

As an antipyogenic, used by injection into fistulæ, either in full strength or diluted by fluid or viscid cosmoline or lanolin, it has produced eminently satisfactory results in some markedly discouraging cases.

It will thus be seen that, from the dental stand-point, campho-phénique is a medicine which it behoves us to test thoroughly;

that if it shall be found to perform even a portion of the good offices which it so largely promises, suffering humanity shall promptly rejoice over this additional assuager of some of its many ills.

Although intimation of other uses than those pertaining strictly to dentistry might here be regarded as irrelevant, yet so many phases of trouble, such as wounds (cut or contused), burns, sprains, intolerable itchings, etc., are so decidedly relieved by applications of campho-phénique (either pure or diluted), that I feel sure that those unfortunates who may chance, through such mention, to find relief from these inflictions cannot but feel grateful for this information.

Campho-phénique is stated by its manufacturers, The Phénique Chemical Company of St. Louis, to be a definite chemical compound, having a formula $C_8H_{11}O$, and thus, "for obvious reasons," it has had given to it the name under which it is presented to the healing professions.—*The Dental Cosmos*.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from June 1st to June 30th, 1889 :—

					London.	National	Victoria.
Number of Patients attended					—	1825	842
Extractions	Children under 14	...	...	...	426	257	553
	Adults	...	...	...	874	448	
	Under Nitrous Oxide	...	...	...	1001	747	
Gold Stoppings					307	112	76
Other Stoppings... ..					1039	399	123
Advice					161	403	—
Irregularities of the Teeth					60	136	—
Miscellaneous and Dressings					221	163	245
Total					4,089	2,665	1,103

BIRMINGHAM DENTAL HOSPITAL.

The number of patients treated during the month of June was 447—Males, 120 ; Females, 165 ; Children under ten years of age, 162. The operations were as follow :—Extractions, 366 ; gold fillings, 18 ; other fillings, 101 ; miscellaneous and advice, 79. Anæsthetics were administered in 28 cases.—FRED. R. HOWARD, *House Surgeon*.

THE DENTAL RECORD, LONDON: AUG. 1, 1889.

HOLIDAYS.

AT this season of the year the majority of dentists will either be participating in, or looking forward to some respite from work in the shape of a holiday. Of all hard-worked professional men, there is perhaps no class of persons who deserve a good holiday more than ourselves. And this applies more especially to those who work in large towns such as London, with all the drawbacks of bad light and bad air, and that condition of nervous tension which seems to cling to the very existence of those crowded into any of our large centres of population, and which is engendered either by actual participation in the fierce competition which exists, or by the taint of that spirit of unrest and struggling for life which appears to saturate the very atmosphere which surrounds us. Moreover, the dentist's work is of itself most trying. No one would for a moment suggest that carrying out the most delicate operations in a cramped position, often in a bad light, breathing air which is loaded with CO_2 (and too often something worse), having to contend with nervous patients—some of whom will not, and some of whom cannot bear pain, without mentioning the moral effect (which to sensitive temperaments is well nigh intolerable), of having one's life work associated with the infliction either of actual suffering or at least of much personal discomfort; no one, we say, would for a moment suggest that this is work of a congenial nature or conducive to health. The dentist—of all people—wants a holiday, and if he works hard he deserves a good one, both in quality and duration.

There are one or two conditions which are absolutely necessary for a successful holiday. In the first place climatic influences should not be lost sight of. It is just possible that a mistake in this respect may mar an otherwise capitally

planned holiday. The sea does not suit everybody; mountain air is not the elixir of every man's life; a bracing climate is not always conducive to health, whilst a relaxing neighbourhood may, on the contrary, under certain circumstances, be the great desideratum of a tired brain. Each should try and make up his mind what suits him best. Another factor which is not to be despised is the selection of suitable companionship. Man is a social animal—if anything; and there are but few individuals whose ideal of a holiday would be to lead a hermit's life for a month or so. But this misanthropic ideal would be bliss as compared to the necessity of being chained to those of a miserable, frigid, mean and uncongenial spirit. Half the success of a holiday is genial society, and a happy arrangement in this direction goes far to reconcile one to any misfortunes of weather or circumstance. There is one other consideration which should not be forgotten, and that is that business cares of every description should be delegated to a safe distance, absolutely put on one side, and, if possible, forgotten. Change of scene is not sufficient; the brain must, in order to recuperate its powers for future work, be granted a respite from its accustomed labours. It need not be absolutely idle, but it should rest in congenial change. And here our pet "hobbies" prove useful if we do not ride them too hard; but they must be able to perform in the open country, and not trotted out under any roof except the sky. Out-door sports of every kind minister to the enjoyment of a holiday, whilst some of the more serious pursuits, such as sketching or photography, which take us out into the open air seeking for the picturesque and beautiful, are by no means to be despised.

Should we be successful in planning out our holidays in the manner and spirit described, we shall return to our labours without grumbling, ready to cope—and that cheerfully—with the difficulties of our work in the strength of that renewed vigour which is simply invaluable to all honest workers—whatever their calling; which cannot be conjured from the depths of philosophy; cannot be weighed, analysed,

or bought; which is partly physical and partly psychical, and is so often associated with the pleasant reminiscences of a holiday.

The Dental Impostor. A letter from a correspondent on another page calls attention to a somewhat novel form of imposture, which we trust is not common. The most ordinary stamp of impostor is the gentleman who is dressed in a shabby frock coat, carries a pair of gloves and a walking stick, and is very apologetic for taking up a moment's time of the busy dentist he calls upon. He has generally "been in practice for himself," but through misfortune has been compelled to take a situation as a mechanical assistant, and is at the time he calls upon you in dire distress, for the gentleman in the provinces (who lives several hundred miles away) has suddenly "got slack" and has been very reluctantly compelled to dispense with his services, and now he has come to London or some other large town to seek for work. A very plausible gentleman of this type was amusing himself in London last year. We were taken in—we confess it with shame. A single enquiry served to prove that we had been duped. The still more refined and accomplished impostor is the well-dressed gentleman or lady who shows you a tooth which you stopped for him or her many years ago, and who ultimately swindles the dentist by getting a cheque cashed or obtaining a temporary loan. A clever rascal of this sort visited several country dentists some years ago, always intended taking a house or apartments in the neighbourhood, and was going to have some mechanical work done. Somehow or other the "money deposit" was always paid by the dentist, and the patient flitted. The note of warning sounded by our correspondent is timely, and may serve to put us on our guard against this and other forms of imposture.

GOSSIP.

A NEW departure in medical literature is found in the journal, entitled *Archives of Surgery*, which will only continue for a limited time and be contributed to solely by Mr. Jonathan Hutchinson. In the prospectus issued the Editor and contributors rolled into one says:—"It may seem almost a work of presumption to begin the issue of a Journal to which I purpose, with but very few exceptions, to be the sole contributor. The fact is, that I have a very large store of

clinical material, much of which is carefully edited and ready for the press. My engagements are such as to preclude that continuous attention which is needful to prepare a book. I can only do fragmentary work, and I am much attracted to a form of publication which will permit of my recurring to the same subject should it seem desirable to make additions or corrections." The contents of the July number promise to be of great interest, and we have no doubt but that Mr. Hutchinson has much clinical material likely to prove of great interest.

It is not often that the muse is tempted by anything dental ; the subject is too prosaic and altogether refuses to decoy the "divine afflatus" which is supposed to inspire our bards. Here, however, is an exception which appears in an evening paper:—

TO MY DENTIST.

An hour with thee!—To stop decay
 With gold or with amalgam grey!
 Oh! what can frame my mind to bear
 The pangs that stab, the pangs that tear,
 New shoots of agony untold
 And dull remembrance of the old?—

One hour with thee!

One hour with thee!—The sun is set ;
 But what can help me to forget
 The stern ordeal of the day,
 That golden guinea paid away,
 And all the prospect of new pain
 When I shall call to spend again

One hour with thee!

It is necessary from time to time to sound a note of warning with respect to the possible dangers of cocaine. A correspondent sends us the following cutting from a local paper—*Narrow Escape*.—Mr. F. A. Dixey, of Wadham College, had a narrow escape from death last Thursday week. A visit to a dentist is not often associated with danger, but it appears that Mr. Dixey, who had to undergo a somewhat painful operation to his teeth, received an injection in his gums of hydrochlorate of cocaine, and from constitutional or other causes almost succumbed to the effect of the anodyne. We understand that two doctors were called in, and it was long before Mr. Dixey was brought to consciousness. He was

removed to the Acland Home on Saturday, and is now making satisfactory progress.

THE next few weeks will be rich in dental meetings. The British Dental Association meets in August, the American Dental Society of Europe during the same month in Paris, while in the following month comes the International Dental Congress. The demonstrations at Brighton will be a special feature of the meeting, and we feel sure that a hearty reception will be accorded to Dr. Bonwill, who is now visiting this country, and will take part in the demonstrations referred to.

WE often cry out about dental advertisements forgetting that almost every calling must necessarily have its black sheep, and that the Medical profession—to which we look up as our model—has to contend with the same difficulties both here and abroad. Dental advertisers are not without ingenuity in this country, but they are quite out of the field as compared with some “tall” work done on the other side of the water, as will appear from the following paragraph which recently appeared in the *Illustrated Medical News*:—There is too much tendency in the present day to resort to personal advertisement, and to bring one's name before the public in non-medical newspapers. But, happily, we have never yet in this country reached the standard of perfection which has been arrived at in America. In an American paper we find the following heading: “A Curious Way to Advertise an *Obstetrician*.”

“FLAMIN.—Saturday, the 9th inst., at 8.15 a.m., to the wife of D.W. FLAMIN, of College Hill, a ten-pound boy. Thanks to Dr. Wallingford, of Cincinnati.

“GALLION.—June 5th, to Mrs. NONA GALLION, of Liberty Street, a nine-pound girl. Thanks to Dr. Wallingford.”

When reading such a notice one naturally feels inclined to look at another side of the question, and to ask whether no thanks are due to Messrs. Flamin and Gallion as well as to Dr. Wallingford. But we can hardly suppose that Mesdames Flamin and Gallion would have permitted such a notice to be inserted in the paper in question were it not with the consent of Dr. Wallingford.

SOME swimming competitions, in connection with the club attached to the Dental Hospital of London, took place under

favourable auspices at the Davies Street Bath, on Monday evening, July 22nd. The arrangements were creditably carried out by Mr. Arthur Colyer. The medal given by Messrs Ash was won by Mr. Spray very cleverly. The first prize in a handicap race (a silver cup, presented by the Dean) was won by Mr. Longhurst, the second prize (a salad bowl, presented by Dr. Dudley Buxton) falling to Mr. Spray; while the third prize was won by Mr. Hordern. A competition in diving for eggs placed at the bottom of the bath caused much amusement, and at the same time afforded an opportunity for the display of much skill. The first prize (a cup) fell to Mr. Mallet, while a special second prize (given by Mr. Truman) was bestowed upon Mr. Pedler.

THE Shah has been the one topic of conversation of late, and has run "the weather" very hard in the world of shallow conversationalism, which lies all round us. Those interested in the advancement of dentistry were pleased to find that His Persian Majesty, was sufficiently devoted to the well-being of his dental organs, to attach his own dentist to his travelling suite. A society paper gives us a little insight into Persian dentistry in the following amusing paragraph:—"One of the most honoured of the Shah's suite is the Imperial dentist; and Monsieur Hybennet has probably seen more of English high life than any person of his calling, except, of course, Mr. Evans. In his second diary his Majesty frequently alludes to the Persian dentist-in-chief, who is, I believe, a Swede. One characteristic passage runs thus: 'Monsieur Chrétien, also a dentist, who was known to me through having on my former voyage *amused himself* with my teeth, came some days ago, with Dr. Tholozan. Hybennet had filled a hollow tooth of my left upper jaw, but the filling had become loose, and Hybennet could not get it out; but when Chrétien had worked at it *for some days*, it finally came out. I was very glad, and am going to have the tooth filled anew.' This was in 1878, but Hybennet has still charge of the Imperial teeth."

A LADY called upon her dentist the other day and told him her teeth were troubling her, and she was anxious that they should not interfere with her comfort during the next few days as she had to entertain the Shah. All dentists are notoriously serious, but this

particular member of our order, broke through his usual reserve and gave the reassuring answer "Oh, no, I promise you they Sha'(h)nt!" Comic dental papers please copy.

It is a pity some of the quacks in this country cannot be dealt with in the same manner as the Hindoo doctors (?) mentioned in the following account given in "*The Chemist and Druggist*."—The Dijon Correctional Tribunal the other day spent much time in hearing the case of Theoula and Pakeroula, from Delhi, who claim to be Indian doctors, and recently came to France, accompanied by a man describing himself as formerly a member of the English army. The object of the trio was to sell a wonderful eye-wash, composed of flour, sugar, dry nuts, bitter almonds, and olive oil; only, to complete the remedy, the patient was required to supply a 400f. diamond, to be melted with the other ingredients. It seems they cured many sore eyes—probably diamonds are plentiful in Dijon—and were quite successful, when the police rudely interfered, and arraigned Theoula and Pakeroula before the courts, charging them with illegal practice of medicine and pharmacy, and swindling besides. While the case was in progress the soldier, who had been acting as an interpreter, prudently disappeared, and for a time proceedings were at a standstill. The court tried to go on with the case by means of the most expressive signs and mimicry at their command, but had to give it up, when, fortunately, another interpreter was discovered in the person of M. Bouley, an old gentleman who had been a gardener to the Rajah of Kashmere. The result was a sentence of six months' imprisonment for each of the Asiatic physicians.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

A WARNING.

To the Editor of the DENTAL RECORD.

SIR,—May I ask the favour of a small space in the next issue of the RECORD to warn members of the profession that a person, who is quite unknown to me, has been begging money from some members of the profession, and fraudulently representing himself to be

NEWPORT, MON.

Yours, &c.,

July 22nd, 1889.

GRAHAM W. WHITE, L.D.S.I.

POST GRADUATE TEACHING.

To the Editor of the DENTAL RECORD.

SIR,—The successful experiment of Post Graduate courses led several practitioners to expect that they would be repeated, and I think I am right in saying that many are disappointed that the promise of future classes has not, as yet, been fulfilled. The authorities of the Dental Hospital of London gave out that they were going to hold a course similar to the one given last year. Was this experience a failure? or do they lack sufficient energy to carry out their promise? There are many men who would esteem it a boon to brush up their knowledge, or to acquire fresh experience; and it seems a pity that where a distinct want is felt, that those who are capable of supplying it have not sufficient enthusiasm and interest in their weaker brethren to do what they can in this direction to raise the profession.

I am, &c.,

LONDON, *July 23rd*, 1889.

L.D.S.

ANNOUNCEMENTS.

THE BRITISH DENTAL ASSOCIATION.

THE Annual General Meeting of the above Association will be held in the Royal Pavilion, Brighton, on August 21, 22, 23 and 24. The following is the official published ORDER OF PROCEEDINGS.

Wednesday, August 21st.

8 p.m.—Reception by the President-Elect, S. LEE RYMER, Esq., at the Pavilion, to be followed by a Chamber Concert, consisting of Instrumental and Vocal Items.

Thursday, August 22nd.

9 a.m.—Meeting of the Representative Board.

10.30 a.m.—The Annual Meeting for business (open to members only). *At the termination of the Association business the Meeting will be open to Visitors.* Mr. DANIEL CORBETT will deliver his valedictory address.

Mr. S. LEE RYMER will take the chair and deliver an address.

LIST OF PAPERS PROMISED.

The following important Papers will be read:—

"On Ether," by Dr. CRUISE, of Dublin.

"On Chloroform," by BOWMAN MACLEOD, L.D.S.Scotland.

"On Nitrous Oxide Gas," by Dr. DUDLEY BUXTON, London.

"On Mixtures," by Dr. FREDERICK HEWETT, London.

It is hoped an interesting and valuable discussion will follow.

"On the Comparison of the Teeth of Tertiary Mammals with those of the Present Day," by JOHN HUMPHREYS, L.D.S.I.

"On Vulcanite Work," by J. H. REINHARDT, L.D.S.

"On Implantation," second paper, by GEORGE CUNNINGHAM, M A.Cantab., L.D.S.Eng., D.M.D.Harvard.

1 p.m.—Luncheon in the Banqueting Room.

2.30 p.m.—Reading and Discussion of Papers.

5 p.m.—Afternoon Tea will be served in the Banqueting Room for Members and Ladies accompanying them. Promenade in grounds.

8 p.m.—Garden Party and Soirée. Military Band in grounds, which will be illuminated. Concert, &c. in rooms.

Friday, August 23rd.

9 a.m.—Meeting of Benevolent Fund.

10 a.m.—Reading and Discussion of Papers resumed.

1 p.m.—Luncheon in the Banqueting Room.

2.30 p.m.—Business resumed.

5 p.m.—Afternoon Tea.

7 p.m.—Annual Dinner at the Pavilion.

Dinner Tickets, 21/-; without wine 15/-, to be obtained of Mr. J. H. Redman, Old Steine, Brighton.

Saturday, August 24th.

9 a.m.—Demonstrations, Mechanical and Operative, at the Pavilion.

Mr. Hayman, L.D.S., will show a case of artificial restoration of portion of face.

Picnic and Luncheon.

Further particulars will be given later on.

SPECIAL NOTICES.

No reduction can be made in railway fares.

All Members attending the Meeting are requested to sign their names in the book provided for that purpose, at the entrance to the Pavilion.

Subscribers to the Benevolent Fund and others are requested to attend the Annual Meeting of the Benevolent Fund.

MORTON SMALE, *Hon Sec.*

THE FOLLOWING LIST OF HOTELS THAT CAN BE RECOMMENDED, WILL, IT IS HOPED, MEET THE REQUIREMENTS OF ALL MEMBERS:—

Private Apartments can be obtained if desired.

HOTELS.—"Grand Hotel." Members will be received on the same terms as those accorded to the Members of the British Medical Association when they visited Brighton. Full board, 10s. 6d. per day; partial 7s. 6d. "Bedford Hotel," bed, breakfast, and attendance, 8s. 6d.; "Clarence Hotel," bed, breakfast, and attendance, 6s. 6d.; "Emery's Temperance Hotel," bed, breakfast, and attendance, 4s. 6d.; "Gloucester Hotel," full board, 9s. per day; "Harrison's Hotel," bed, breakfast, and attendance, 6s. 6d.; "Livingstone Hotel" (Temperance), 14. Old Steine, bed, breakfast, and attendance, 4s. 9d.; "New Ship Hotel," bed, breakfast, and attendance from 6s.; "Old Ship Hotel," bed, breakfast, and attendance, from 7s.; "Royal Albion Hotel," full board, 12s. per day.

It is intended that the "Grand Hotel" shall be made, as far as possible, the "Head Quarters" of the Association, and that Hotel will place at the disposal of the Members a common room for the purposes of social intercourse, &c.

APPOINTMENTS.

LLOYD, RICHARD WILLIAM, M.R.C.S., to be Anæsthetist to the Dental School of Guy's Hospital.

SHEPPARD, CHARLES EDWARD, M.D.Lond., F.R.C.S.Eng., to be Anæsthetist to the Dental School of Guy's Hospital.

BALDWIN, H., M.R.C.S., L.D.S., to be Medical Tutor to the Dental Hospital of London.

JACKSON, THOMAS, Jun., L.D.S.Edin., to be Honorary Dental Surgeon to the Victoria Hospital of Burnley (Lancashire). There has been no previous appointment.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and Answers are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

BORACIC ACID.—Some time ago I placed a tooth in a saturated solution of Boracic Acid, exposing the dentine. At the end of several months it appeared to be unaffected in any way. How would this solution answer as a mouth-wash for daily use? I also made a similar experiment with Benzoic Acid. The enamel and dentine were unaffected, but the cementum was reduced to a soft horn-like consistency and could be readily sliced with a knife.—W. G.

THE RARE CASE OF TOOTH EXTRACTION.—I read in your last issue a note from T. E. Constant, referring to a rare case of tooth extraction. I was amused and at the same time rather indignant that any gentleman from the "Dental" should sneer at the general practitioner, or as T. E. Constant writes, "The medical man who advises his patients to poultice alveolar abscesses on the outside, what his diagnosis would be and what 'surgical atrocity' might result." After reading T. E. Constant's letter it would appear that the rare complication consisted in forcing with an elevator the root into the unusual position from which it was afterwards cut out. Unless the difficulty of the case is more clearly understood one might be led to ask "could a surgical atrocity have been committed?" Again, as regards poulticing an "alveolar abscess," I presume no one would advise it when the swelling shows a chance of "breaking down," but would prefer to operate from the inside. T. E. Constant will no doubt find that poulticing an "alveolar abscess" at the proper time and place is a little bit of knowledge unknown to the general practitioner or to the medical man "who" &c.—FRIEDÄ.

QUERIES.

DR. ELLIOTT'S NEW CROWN.—In the description given of this crown in your last number, Dr. Elliott in trying to be concise in his description, has forgotten to explain one or two little points which appear to me to be necessary before anyone who has not witnessed his method can make one for himself.

(1) Does the band form a complete ferrule? according to the illustration it would appear not, but if not is there not a tendency to wedge the crown *away* from the labial part of the root? (2) Is the portion of gold carried over the cusp of one piece with the band, or is it separately struck up and soldered? I hope Dr. Elliott will not think these questions frivolous; I don't want to criticise, but to obtain sufficient information to try the plan he recommends.—CORONA.

RETENTION OF UPPER DENTURE.—I am informed (on what I believe good authority) that a dentist in Nottingham has fixed a double set on the gums alone, there being no palate, no stumps to get pivots in—none of patient's own teeth remaining. They were at first supplied with the ordinary springs, but after three weeks these were removed, and the teeth are now comfortable and fit well. I have not seen them, but (as before stated) have this on good authority. I fear my question is somewhat badly put, but hope you will understand my meaning.—ALPHA.

* * [We know of no special method outside those in common use for the retention of artificial dentures. The set referred to was probably a very narrow plate, and we have known instances where such have been worn by patients which in ordinary cases would be perfectly useless. The denture mentioned may have been assisted by a *Fulsome Ridge* placed much higher than usual.]

M. S. wants to know (1) where a tiny pamphlet entitled "The Dentists' Act of July, 1878, with an explanation of the difference between a qualified dentist and a registered dentist" can be obtained in quantities of 500 or 1,000. (2) How dentists not possessing any diploma can announce themselves in local directories as L.D.S.

* * [(1) We do not know where the pamphlet referred to is to be obtained, but a very similar one has been published, and may, we think, be heard of by writing to Mr. Blandy of Nottingham. (2) Consult the local branch of British Dental Association.]

ANSWERS.

STRENGTHNERS.—In answer to "Mechanicus," he can obtain aluminium in sheet or wire—I cannot say about being perforated—at Mr. H. Freeman's, 31, Hatton Garden, London. It is both light and strong, but will not bear much bending; it is admirably adapted for strengthening plates if used *thick* enough, but should be covered over. I have used some ounces of it, and at some future time will give results. Price 5/- per ounce.—CHEMIST.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

WE are requested to state that the name of Mr. FELIX WEISS, Vice-President and late Hon. Librarian, was inadvertently omitted from the list of the Council issued with the last number of the *Transactions*. A corrected page will be sent out for binding.

It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 9.

Original Communications.

A METHOD OF COMBINING AMALGAM AND GOLD IN FILLING OPERATIONS, APPLICABLE IN CASES WHERE THE USE OF A MATRIX IS NOT ADMISSIBLE.

By WM. M. GABRIEL, M.R.C.S. and L.D.S., ENG.

THERE are few operations that try the skill and patience of an operator more than that of gold-filling. When, however, the cavity of decay extends so far below the gum that the rubber dam cannot be properly applied and absolute dryness ensured, the difficulties of the case are increased tenfold. In many such cases, especially when the front teeth are concerned, crowning is no doubt advisable, or the tooth may be built up with oxy-phosphate of zinc guarded by gutta-percha at the cervical edge. The former operation is rather a *dernier ressort*, and the latter so uncertain and must be repeated so frequently, that a less heroic, and at the same time permanent method, should be an inestimable boon to both patient and operator.

When we hear of men finding it necessary to have the rubber held down by means of an instrument while they are filling with gold, we are tempted to ask whether the result even if attained, justifies the physical and mental strain on the part of the operator which is inseparable from such operations.

Non-cohesive gold, tin or tin-gold at the cervical edge are in many cases useful, but their employment supposes depth at the cervical portion of the cavity in proportion to breadth between its lingual and buccal angles.

It is then in cases where the cervical portion is shallow and extensive that I find the combination of gold and amalgam especially useful. This is usually done by first inserting the amalgam allowing it time to set, forming retaining points in it or between it and the dentine, filling them with gold and building across from one to the other and finally building up to the desired contour.

The method I am about to describe being a combination of this, the usual plan, and Dr. Clapp's, I propose to call it the "Modified Clapp Method." To insert a filling by this method I proceed as follows:

The gum having been crowded out of the way by Mastich dressings or temporary gutta-percha fillings, or partially removed by ethylate of sodium, &c., the cavity is carefully and thoroughly cut out *without the application of the rubber dam.*

If it can be applied, the necessity, but not always the advisability,* of a combination filling ceases.

In cutting out the cavity, as in all combination fillings, the portion first inserted must be self retaining, *i.e.*, the portion of the cavity to receive it, must be so shaped as to hold it quite independently of the portion subsequently added.

This is a *sine qua non*, and without a proper recognition of this main principle, failure is certain.

Next the prepared cavity is filled up level with the gum margin with copper amalgam (James'). This may, if desired, extend quite high up on the lingual side of the tooth, but should of course be out of sight in front when the gum has resumed its normal position.

The amalgam *in situ*; while it is still soft, a small groove is made in it with a burnisher, from the buccal to the lingual angle.†

The patient is then dismissed, the remainder of the cavity being left *unfilled*.

At the next visit, preferably the next day, the amalgam is trimmed and polished with cloth and paper discs, &c., the cavity washed out and the rubber adjusted, which is now easily done.

The cavity having been properly dried, and the amalgam brightened by scratching it with an instrument, *soft* copper amalgam is rubbed into the *groove* and all that can be wiped away removed.

Small pieces of Steurer's Plastic Gold are now added till the groove is filled up and presents the appearance of gold, a few gold cylinders (Wolrab's cohesive annealed) are then added and the filling completed with foil as when any other method is employed to start the filling.

The chief advantages I claim for this method are:—

- (1.) Relief to patient and operator.
- (2.) That a matrix is not indispensable.
- (3.) That a better result can be secured in this way than by

* A chalky tooth for instance is such a further indication.

† Nos. 3, 4, 5, p. 208, Ash's 1887 Catalogue, are suitable instruments.

Dr. Clapp's method, in as much as *foil* is in contact with tooth substance and amalgam throughout the exposed portions.

It is a great question whether Steurer's Plastic Gold can be made as solid as the inventor claims.

He maintains that a filling may be completed with it, but, on more than one occasion, I have had large portions come away when I thought the operation was completed.

The operation necessitates, of course, at least two sittings, but so far as my experience of Dr. Clapp's method goes (having only employed copper amalgam for gold and amalgam fillings), it is not advisable to polish between the teeth at the time the filling is inserted, since the amalgam takes some time to completely set, and there is, consequently, a danger of reducing the amalgam portion too low, besides that of coating the gold with mercury.

This is, I know, against Dr. Clapp's teaching ; but there is in his most excellent paper † no mention of copper amalgam having been employed in his combination fillings. The filling may, and it is indeed important, that it should be cut down to the bite immediately after insertion, but the interstitial and final polishing is, I think, far better left till another day.

Reports.

ANNUAL MEETING OF THE BRITISH DENTAL ASSOCIATION, 1889.

THE Ninth Annual Meeting of the above Association was held at Brighton on August 21st, 22nd, 23rd and 24th, and was on the whole a great success. This applies to it from both a social and a scientific point of view. As far as could be ascertained all the members and visitors thoroughly enjoyed themselves. The weather was exceptionally fine ; the Grand Hotel was made the headquarters for most of the members, as far as board and lodging was concerned ; and here a special smoking-room was reserved for them, and a special reduction in charges was allowed.

All the business and scientific meetings, as well as the receptions and entertainments, were held in the Royal Pavilion ; a building more suitable could hardly be imagined, with its handsome suite of

† *Dental Cosmos*, December, 1888.

apartments and immense concert hall. The Pavilion proper is lavishly decorated in oriental style; having been, as most of the readers will know, originally a royal residence. The large hall, called the Dome, is connected to the Pavilion proper by means of an underground passage, and the whole situated in pleasure grounds of some size. All this was generously given over by the Corporation of Brighton, during the meetings, absolutely and without charge to the British Dental Association.

The interest in the meetings was especially heightened by the presence and participation of Sir John Tomes, Dr. Bonwill, of Philadelphia, U.S.A., and a deputation of distinguished French dentists, viz.: M. Dubois, M. Godon, and M. Ronnet, all of which trio are on the staff of the Ecole Dentaire de Paris, and the first of whom (M. Dubois) is also president of the Societ  Odontologique de Paris and editor of *L'Odontologie*. M. Godon is also secretary of the Association des Dentistes de France.

The proceedings commenced on Wednesday, August 21st, at 8 o'clock, with a reception by the President Elect, Mr. S. Lee Rymer, in one of the spacious saloons of the Royal Pavilion, and was followed by a chamber concert consisting of instrumental and vocal items of a very high order.

On the following day at 9 o'clock there was a meeting of the Representative Board, and at 10.30 the Annual Business Meeting commenced. At the termination of the business the meeting was thrown open to visitors, and then the valedictory address of the retiring president, Mr. Daniel Corbett, was read by Mr. Smith Turner, Mr. Corbett unfortunately being unable to come over from Ireland. Mr. S. Lee Rymer then took the chair and gave his address.

The reading of a very interesting series of papers on "Anæsthetics," by experts in the different methods, then commenced. Dr. Cruise of Dublin, read a paper on "The Use of Ether as an Anæsthetic in Dental Operations." Mr. Bowman Macleod of Edinburgh, read a paper "On Chloroform." Dr. Dudley Buxton read a paper "On Recent Researches upon Nitrous Oxide Narcosis and their bearing upon the practical question, when and how should Laughing Gas be Administered?" Dr. Frederick Hewitt followed with a paper "On Certain Anæsthetic Mixtures," the most important of which being that of nitrous oxide and oxygen.

This series of papers concluded, the members and friends,

including ladies, adjourned to the Banqueting Room for luncheon, which was served, as on each day subsequently, in excellent style. In the afternoon a highly important discussion was carried on upon the points brought out in the papers on anæsthetics.

Tea was given in the Banqueting Room on each day to members and the ladies accompanying them. At 5.30 on the Thursday, there was a special business Committee Meeting, and at 8 o'clock was given a *soirée* and concert, the music being of the same high-class as on the previous day, and in addition to the excellent band of Mr. Gates and the vocalists, there was, also, a military band. On the following day, Friday, the meeting relative to the Benevolent Fund, took place at 9 o'clock. At 10 o'clock the reading and discussion of papers was resumed, the remaining papers being one by Mr. John Humphreys, "On the Comparison of the Teeth of Tertiary Mammals with those of the Present Day," and one by Mr. J. H. Reinhardt, "On Vulcanite Work." Dr. Cunningham then gave an abstract of an elaborate paper, "On Implantation," in which he followed up the subject from the point at which he left it last year. Then came a concise and practical paper, "On Iodoform : its Action and Uses in Dental Surgery," by Mr. R. Denison Pedley. The papers, with their discussions, were carried on until tea time, when at 5.30 a party of members started on an excursion to the works of the London, Brighton and South Coast Railway. At 7 o'clock, that important function, the Annual Dinner, was proceeded with, and was of such kind as to satisfy the most insatiable gourmet and the most fastidious epicure. The chair was filled by Mr. J. Dennant. The long list of toasts went along pleasantly enough, being alternated with charming music, vocal and instrumental. After the usual loyal toasts, and that of the army, navy, &c., by the Chairman, the Vicar of Brighton proposed "The British Dental Association and Southern Counties Branch." This was responded to by Mr. J. Smith Turner, and Mr. W. B. Bacon. "The Medical Profession" was then proposed by Sir John Tomes, and replied to by Mr. G. F. Hodgson. Mr. F. Canton proposed "The Mayor and Corporation of Brighton, and the Commissioners of Hove," and Mr. F. J. Tillstom responded. Mr. J. H. Redman proposed "The Dental Benevolent Fund," and Mr. S. J. Hutchinson responded. "The Press" then came from Mr. J. Cornelius Wheeler, and the responses from Mr. A. S. Underwood and also, in a humorous speech from a gentleman of the reporting persuasion. The toast of "The

Visitors" was then proposed by Mr. Felix Weiss, and responded to by Dr. Hayman, by M. Dubois (who spoke in French), and by Dr. Bonwill. These very enjoyable proceedings were terminated by a toast from Mr. Morton Smale of "The Chairman." Although the members who remained to the end returned to their temporary abodes at a rather late hour, that did not prevent them from holding afterwards, as on each other evening, a sort of free and easy in their special room at the Grand Hotel until the small hours of the morning.

On Saturday a most interesting series of demonstrations was held, partly at the Dental Hospital of Brighton and partly at the Pavilion.

PAPERS AND DISCUSSION ON ANÆSTHETICS.

On Thursday afternoon, August 22nd, Mr. J. SMITH TURNER in the chair, several papers were read on "Anæsthetics."

Dr. F. R. CRUISE (Dublin), read the first paper on
THE USE OF SULPHURIC ETHER AS AN ANÆSTHETIC IN
DENTAL OPERATIONS.

He said that at an early period of life he was appointed Junior Medical Officer to a large Metropolitan hospital, and it was part of his duty to anæsthetise all the patients about to undergo operations, and for twelve years he was constantly chloroforming patients. During that period he suffered terrible anxieties, so much so, that he even still looked back upon it with horror. Happily he never had a death, but he knew that he escaped fatal results by a very narrow margin on at least three occasions. Impressed with the great responsibility of his position, he longed to discover some means of inducing anæsthesia with greater safety, to find a drug which would not necessitate unceasing anxious watching of the pulse. In 1871 he had the good fortune to see the late Dr. John Morgan, of Dublin, using ether in the Lock Hospital, and he felt at once that he had seen what he had so longed for. Since then (just eighteen years) he had used ether almost without exception in the numerous cases which required an anæsthetic, and had never observed a symptom to cause him grave uneasiness. Dental operations were most easily performed in the erect or semi-erect posture, the very position in which chloroform seemed most apt to induce cardiac failure. So far as his experience went the invariable effect of ether was to improve the heart's impulse and the circulation generally. Moreover,

the vapour of ether undiluted was practically safe with ordinary attention, while chloroform vapour was most dangerous if exceeding four per cent. in strength. He took it for granted that in short dental operations, such as the extraction of one or two teeth, the most suitable anæsthetic was nitrous oxide. On the other hand, he was strongly of opinion that in prolonged operations, such as the clearing away of a number of teeth or stumps, the inhalation of ether was both safe, satisfactory, and perfectly convenient. The mode of proceeding which experience had led him to adopt was as follows: First, he arranged that the patient should not have taken food, even liquid, for at least four hours previous to the inhalation. This was a most important condition in order to avoid nausea and vomiting. Next, he saw that the dress was so loosened and arranged that no restraint whatever was exercised upon respiration. Then, having placed the patient in position, he stethoscoped the heart and proceeded to give the ether. There were very few, if any, conditions of the heart, short of a state of depression indicating impending death, which would prevent him from proceeding with etherization. For administering the ether he always used Allis's inhaler, which was of the simplest possible construction, allowing of the exhibition of ether vapour, either with the admixture of air or nearly pure. The inhaler consisted of numerous folds of a cotton fabric, held close together by a metal framework, the whole being enclosed in an india-rubber case open at both ends. The ether was poured on the cotton fabric, and the outer case being of a shape to fit accurately over the nose and mouth, the patient was made to breathe a vapour of mixed ether and air. The latter could be diminished in quantity by closing the india-rubber over the free end of the inhaler. He commenced with one ounce of ether on the inhaler, and rarely had to exceed four ounces in any case for a dental operation. If the patient was an adult and not nervous, he always commenced with ether alone, invariably using pure ether, sp. gr. 730, and never the methylated kind. It was less irritant, more effective, and caused much less headache and subsequent disturbance. Occasionally some patients found it a little difficult to bear the ether vapour at once, as it irritated the larynx, and induced cough and a feeling of suffocation, therefore the inhaler must be cautiously brought over the mouth and the patient encouraged to bear it. If he did so, a very short inhalation sufficed to dull the sensibility of the larynx, the head was felt to throb, the face

to flush, some vertigo was experienced, the respiration became rapid, and then drowsiness came on. From this moment the ether was borne without inconvenience, and might be pressed. This was readily done by pouring fresh ether on the cotton fabric, and by closing over the india-rubber covering of the inhaler so as to lessen the quantity of atmospheric air. In certain cases, especially with children and nervous subjects, it was not possible to get over this stage without the use of a few inhalations of bichloride of methylene, or the administration of nitrous oxide. This initial stage of etherization was the one which required the most skill and tact on the part of the administrator. When once that was passed all the rest was easy. The ether might then be pushed until the stage of "struggling" ensued. A gentle but strong assistant easily kept the patient in position, and the ether being persevered with, complete insensibility came on, indicated by some stertor and absence of reflex sensibility of the cornea. When this point was reached the inhaler might be removed, and the mouth opened with the gag forceps, and the operator might go to work for from three to five minutes with the conviction that the patient felt nothing, even though he groaned and resisted somewhat. If during the operation the patient seemed to become partly conscious, he wiped the mouth clear of blood and saliva, and re-applied the inhaler. The operation being completed, the mouth should be cleansed out with a sponge, the face bathed with cold water, and very soon the patient would wake, feeling somewhat stupefied, and with more or less of headache. The latter was seldom troublesome if pure ether was used and the inhaler such as he had recommended, and not one of many varieties in which the vapour inhaled was a mixture of ether and the patient's own exhalations breathed over and over again. It was sometimes objected to ether that it was slower in administration than chloroform, and also in recovery. This was but a small disadvantage considering its greater safety as proved by statistics, but he was not at all sure that if properly handled, it required more time than its more dangerous rival. He lately took ether himself to avoid the pain of the extraction of a very bad tooth, and he was able to write a letter and see a patient within half an hour of the moment when he sat down to undergo the operation. He could not say that the after effects were considerably more disagreeable than those he experienced from the use of nitrous oxide on a previous occasion. Many times he had entered the dentist's

house with patients, and left it with them, all completed, within half an hour. As to the slowness of recovering, if it occurred, it caused little inconvenience, as most dentists had a room set apart for patients who required anæsthetics. A more tangible objection to ether was the nausea and vomiting it was liable to cause, but this complication might be avoided in nearly all cases ; first, by arranging that no food should have been taken for at least four hours previously ; secondly, by using pure ether, and giving it as quickly as seemed safe ; thirdly, by carefully cleansing the mouth during the operation, which could be done with a small sponge, held in a suitable forceps, so as to prevent the patient swallowing the abundant mucous secretion caused by the ether, and blood caused by the operation. If either the mucous or the blood reached the stomach, it would certainly act as an emetic. It would be asked, what signs should the etherist watch in order to avoid danger to life. Firstly, he always watched the heart, and could aver that he had never yet seen it fail under ether ; on the contrary, its action seemed invariably to improve. Herein lay its incaluable advantage over chloroform, which, however carefully administered, would sometimes cause sudden, unforeseen and irremediable syncope. Secondly, the respiration should be carefully watched. If any danger existed in etherisation it was here. Occasionally the mouth became fixedly closed, and inspiration was impeded. All that was needed was to open the mouth with the gag forceps and draw forward the tongue. A greater risk arose in those cases where, about the stage of struggling, the chest wall seemed to grow fixed, and lividity of the face ensued, but he had always found that the removal of the inhaler for a short time, with cold sponging of the face, sufficed to bring all right. Were it otherwise he would at once adopt artificial respiration, but he had never yet been obliged to do so. Thirdly, if vomiting occurred while the patient was stupefied with the ether, it was necessary to turn him promptly on his side and see that the vomited matters had free exit and did not fall back into the larynx and trachea. If they did, tracheotomy might possibly be required, but he had never seen such a case. Finally, it might be asked, "Are there any cases in which the use of ether is contradicted?" There were some, but they were very few and far between. In cases of operations done by artificial light, its inflammable nature rendered ether unsuitable. In patients with bronchitis, emphysema, advanced Bright's disease, degenerated arteries, the risk of etherisation was

increased. However, in these cases a severe dental operation was to be avoided altogether, and it seemed doubtful whether any other anæsthetic would be practically safer.

Mr. BOWMAN MACLEOD (Edinburgh) next read a paper on
CHLOROFORM.

Dentists, he said, knew full well that there were many cases which required operative interference, the pain attendant upon which was almost beyond average healthy human endurance, and which if inflicted upon a body already weakened by suffering, physical and mental, would undoubtedly produce an amount of prostration which might terminate in death, or the recovery from which would be slow and probably imperfect. Under such circumstances, it was incumbent upon dentists to accept the responsibilities which followed the practice of the profession, and in using an anæsthetic to use that which gave the greatest good to the greatest number. He would place them in this order:—(1) Chloroform, (2) Nitrous Oxide, (3) Ether. In the administration of chloroform, in view of the now pretty well ascertained sources of danger, and their antidotes, the risk was but small, and the attendant good more than amply justified the administration. It was curious to note that the authorities of to-day had but emphasized and systematized the methods and rules advocated by Sir J. V. Simpson and his fellow practitioners, namely, that the drug should be pure, the stomach free from undigested food, the patient recumbent, and all obstructions to free breathing removed. No complicated apparatus should be used in the administration. A folded towel or a piece of flannel stretched over a convex wire frame was all that was required. It induced no alarm on the part of the patient, and permitted the operator to feel the breathing and watch any change of the normal appearance of the face which might presage approaching danger. The time for operating was when the patient was said to be "under." This was indicated by the suspension of all reflex action except those of respiration and circulation, and could be best ascertained by the condition of conjunctiva. Any operation before this condition was reached was fraught with danger at any time, and more so when the fifth nerve was involved. It was sometimes the cause of death, and under such circumstances the result could not justly be attributed to the drug. The dangers and troubles attending chloroform administration were respiratory and cardiac. The arrest of respiration when sudden might be due to the falling back of the tongue or to

the pressure of foreign bodies. The possibilities of such occurrences should be narrowed by removing artificial teeth, &c., from the mouth, and tilting the head well back, though not to the same extent as recommended by Howard before beginning the inhalation. In the case of sickness the patient should be turned completely on his side, and when vomiting ceased the mouth should be sponged. If the stomach was empty and the patient only retched, the administration of chloroform should be pushed, and so the reflex action abolished. The heart complications were those associated with and those secondary to difficulty of breathing when the right side of the heart became distended, and congestion resulted. The restoration of respiratory action usually removed this dangerous complication ; but in especially anxious cases, the external jugular vein might be opened, or, as a last resort, the right ventricle might be punctured, blood withdrawn, and the endocardium at the same time stimulated. Should the action of the heart become depressed, as indicated by extreme pallor, and weak and intermittent pulse, a hypodermic injection of ether might be given, or it might be administered on the towel. Chloroform was contra-indicated only in those suffering from weak and intermittent heart. The best antidote to all chloroform complications was fresh air. The advantages attending the use of chloroform in preference to other anæsthetics, were extreme simplicity of administration, and agreeableness in its inhalation. It did not irritate the fauces, nor induce an extra flow of saliva, the latter being a distinct disadvantage in the use of ether for operations in dentistry. It induced a profound narcosis, which, when attained, endured sufficiently long to permit of a very painful and prolonged operation being performed. The usual precaution being taken with regard to food, it was very rarely attended with sickness. It afforded a pleasant and rapid recovery, and was more free than ether from subsequent inconvenience or complications. The one thing above all others to avoid prior to or during the administration of chloroform was shock or fear. In an address by Surgeon-Major E. Lawrie, Principal of the Hyderabad Medical School, the results were given of 200 experiments on animals and personal observation of the effects of chloroform on between 40,000 and 50,000 human beings. The conclusion arrived at by the Commission was clearly stated in a letter to the *Lancet* of May 11th, 1889, in answer to an article in that journal controverting the finding of the Commission, and upholding the theory taught by the English

school. Surgeon-Major Lawrie said: "The *Lancet* would trust to the heart and circulation for signals of danger in chloroform administration. Our contention is that if the administration is ever pushed far enough to cause the heart to show signs of danger, the limits of safety had already been exceeded, and a fatal result must inevitably ensue. So far from disregarding the heart as a factor in chloroform dangers, we say that any affection of the heart, either direct or indirect, is the one danger to avoid. But we say further, that the respiration invariably gives warnings when a dangerous point is approached, and consequently that it is possible to avert all risk to the heart by devoting the entire attention to the respiration during chloroform administration." No agent had been so well abused, so miserably used, so misunderstood, and hitherto so carelessly handled, and this being so, it was no wonder that so many untoward results had followed in its wake. There still remained the one great broad fact that an equally good and more reliable anæsthetic had been sought and not found. Many had been introduced and their advent proclaimed with jubilation. All had had their prognosticated powers and merits curtailed as experience proved their limitation. Each new general or local anæsthetic had been hailed as the champion which was to unseat chloroform from its throne, yet amid all the din of opposition it had not only held its own, but had gradually and steadily maintained its supremacy, and it remained to this day the one anæsthetic which best met the varied requirements of serious, delicate, intricate, or very painful operations; and which, notwithstanding the many charges, mostly unjust or exaggerated, which had been laid at its door, still remained supreme, the one most used by surgeons, the one most appreciated by the patient. As evidence of its increasing use he would mention that having occasion lately to be in the laboratory of Messrs. Duncan, Flockhart & Co., he inspected their new distilling apparatus devised and arranged by Dr. Clarke of that firm, an apparatus which with mathematical precision ensured the absolute purity of the drug, and he was then informed that for every one hundred pounds of chloroform made by them in 1881 they now turned out 175 lbs. That was a broad incontrovertible fact from which more reliable deductions could be made than from statistical tables which gave relative percentages, and which could at best be only drawn from varying and incomplete records,

Dr. FREDERICK HEWITT, M.A. (Cantab), then read a paper on
CERTAIN ANÆSTHETIC MIXTURES WITH SPECIAL REFERENCE
TO THOSE IN USE IN DENTAL SURGERY.

He said the mixtures to which he would confine his attention were nitrous oxide and ether, and nitrous oxide and oxygen. They were indebted to the late Mr. Clover for the first valuable combination of anæsthetics. Either nitrous oxide might be used in the ordinary manner, narcosis being fully established, and then a small quantity of ether added; or nitrous oxide might be used as a preliminary to deep etherization. Those were two distinct ways in which the anæsthetics might be combined. Some time ago at the Dental Hospital he conducted an investigation with nitrous oxide with what might be called a whiff of ether in accordance with Mr. Bailey's suggestion, and was surprised to find how very little nausea and vomiting occurred after a small quantity of ether. The anæsthesia from nitrous oxide was prolonged some ten or fifteen minutes, and the patient recovered very completely indeed. The administration of nitrous oxide as a preliminary to etherization was often a matter of some difficulty. Nitrous oxide was a gas which could not part with any free oxygen: it could only be given to a certain extent, and if it was given with a face-piece possessing expiratory valves so that all expirations escaped, a time came when the patient was seized with certain symptoms which were in reality due to the deprivation of oxygen. If at that particular moment ether were given without the admission of any air, respiration could not and would not proceed. Hence the difficulty in giving nitrous oxide as a preliminary to deep etherization resolved itself simply into knowing exactly how much air to admit between the gas and the ether. There were various forms and apparatus for giving nitrous oxide and ether, but without referring further to them he would mention what he regarded as the principles upon which the two anæsthetics should be combined. In the first place, nitrous oxide should be given so that expirations escaped from the expiratory valve; in the second place, ether should be gradually admitted, and on the word "gradual" he would lay great stress. In the third place, to-and-fro respiration should be promoted. In the fourth place, a small quantity of air should be admitted when the patient showed any sign of embarrassment of breathing, which usually occurred at the close of the administra-

tion of nitrous oxide by itself. When any of these symptoms occurred a small quantity of air must be admitted, in order to maintain respiration. In the last place, ether must be increasingly administered. In that way it was possible to pass from nitrous oxide narcosis to deep etherization. With regard to the administration of nitrous oxide and oxygen, that had not been practised to any great extent in this country, but from what he had seen of the anæsthesia which might be obtained by the admixture of those gases he believed the time would come when nitrous oxide and oxygen would be very widely used in dental practice. Among the disadvantages of nitrous oxide was its power of setting up symptoms due to the deprivation of air. If it were given with a certain proportion of air anæsthesia would not become fully established, and the more air there was mixed with the gas the less profound would be the anæsthesia and the less marked the asphyxial symptoms. It had been argued that it was necessary that patients should have 100 per cent. of nitrous oxide in the lungs in order that the particular blood tension of the nitrous oxide should be established to produce anæsthesia, and that supposing the atmospheric pressure in which the patient existed to be double, it should be possible by giving equal quantities of air and nitrous oxide to maintain the anæsthetic effect of gas, and to exclude all asphyxial symptoms by reason of the air that the patient was breathing. Experiments made upon lower animals showed that the theory was perfectly correct, and the more perfect form of anæsthesia resulted. Attempts were then made to give nitrous oxide and oxygen together at what some termed ordinary atmospheric pressure, but when employing the face-piece and bag it was very difficult to say that the gas was being given at an ordinary atmospheric pressure. It was therefore well to use the term *introthoracic pressure*. At the present time in Germany and America nitrous oxide and oxygen were given together very largely by means of a gasometer, but the results seemed unsatisfactory. Dr. Hewitt then exhibited and explained a portable gasometer which he had had made. It contained about twelve gallons. After a very great number of cases he found that the best percentage of oxygen was about one-eighth. In comparing nitrous oxide anæsthesia with that obtainable by the mixed gases a very remarkable contrast appeared. With nitrous oxide and oxygen there was an entire absence of lividity, the colour of the patient's lips and cheeks remained perfectly good, and in fact often heightened rather than diminished. There was

no stertor, no irregularity in breathing, no embarrassment of respiration, in fact the respiration was so real and calm as to be almost imperceptible. The pulse was full, soft, and regular, and there was no jactitation. As a general rule, when about twelve gallons had been inhaled, the patient was quite flaccid. The usual signs of nitrous oxide narcosis were entirely absent. If the face-piece were then removed an anæsthesia of a somewhat longer duration than that obtainable from nitrous oxide resulted. He had administered it in 250 cases, but thousands of cases should be known before any tables were drawn up. He had taken the mixture twice himself, and could testify to the rapidity with which consciousness was lost, and to the absolute loss of all painful impressions. One of the gentlemen who helped him counted aloud so that he might be heard, and at every ten another gentleman pricked him with a long sharp needle. He remembered the pricking when ten and twenty were counted, but from that time up to seventy, when he came round, he had absolutely no consciousness either of pain or of surrounding objects. There was conclusive evidence to show that nitrous oxide was a true anæsthetic and that the symptoms referable to the deprivation of oxygen were purely accidental. He could not himself see that there was the slightest danger in continuously breathing this mixture. Patients could go on respiring it almost *ad infinitum*, because of the oxygen it contained. If a patient should be found who did not take the mixture well it was very easy indeed by a simple arrangement to give pure nitrous oxide.

Dr. DUDLEY WILMOT BUXTON read the next paper

ON RECENT RESEARCHES UPON NITROUS OXIDE NARCOSIS AND
THEIR BEARING UPON THE PRACTICAL QUESTION, WHEN
AND HOW SHOULD LAUGHING GAS BE ADMINISTERED?

He said the questions which practical men asked themselves in considering the value of an anæsthetic were: (1) Is it efficient? (2) Does its use entail danger to the patient? Among medical men there was still a curious dread of nitrous oxide, and time after time he had been told that Dr. So and So considered Miss Blank "not strong enough to take gas." This arose from the fact that the average medical mind regarded nitrous oxide narcosis as a modified form of asphyxia, and was prone to communicate this idea to the patient, who very properly translated "asphyxia" as being smothered or choked. But nitrous oxide was no asphyxiant. It possessed a

specific action upon the organism which differed widely from that which obtained when a different gas was respired while oxygen was withheld. By actual experiment it was found that nitrous oxide produced gross changes in the organism. Thus if the skull of an animal were trephined and a sufficiently large window were made in the bone to expose an area of an inch or so across, the pulsation of the brain beneath the dura mater could be watched, and the colour of the membrane observed. Under ordinary circumstances there existed after trephining a very distinct space between the bony calvarium and the dura mater, and rhythmic pulsations occurred, bearing a direct relation to the systole or general arterial dilatation. As soon as nitrous oxide was administered the brain began to swell up, and although preserving its normal colour for a time, the hemispheres assumed a most remarkable appearance. Simulating a hernia cerebri, they protruded into the trephine hole. The colour of the brain now changed from a bright vermilion to a laky purple, the undulations changed in character, becoming less in frequency and amplitude, the volume increased, and at length movements ceased. The dura mater then was pearly and glistening with a bluish lustre, and upon examination of the vessels of the pia mater, the well-known appearance of commencing stasis was seen. Upon resumption of air and a shutting off of nitrous oxide, these phenonema were repeated in a reverse order. Experiments had also been made on the spinal cord. Several laminæ were removed, and the spinal cord exposed, in some cases the theca being incised, in others left in its entirety. Nitrous oxide was then administered and the following phenomena were observed. The spinal cord underwent an increase in size, which was pretty clearly evidenced by the overflow of cerebro-spinal fluid. The difference anatomically between the brain and cord made the former an easier organ upon which to study the changes in the vascular membranes, but no more striking proof of the enlargement of the whole cord could be obtained than that afforded by the overflow of cerebro-spinal fluid, which took place as soon as the animal was brought under the influence of the nitrous oxide. It appeared necessary to grapple with two questions, viz. :—(1) Are these phenomena really due to nitrous oxide, or (2), are they due to deoxygenation of the tissues? To deal with the second question, certain apnœal experiments were made. In one series, the trachea was tied, while in the other a curarised animal was, after a time, left without artificially performed

respiration, this being done to avoid the struggles which by their very violence produced a rise in blood pressure, and so gave an illusory resemblance between the states of apnœa and nitrous oxide narcosis. The conclusions he arrived at were that apnœa produced changes far more slowly than those occurring in nitrous oxide narcosis; that the brain and cord, although when much muscular struggling was permitted, undergoing some engorgement, and becoming purple and almost black, did not swell up, but actually lessened in volume in apnœa. The lessening in volume, provided the apnœa had not been carried too far, might be checked, and even changed to a state of enlargement if nitrous oxide were administered. Experiments showed that besides causing anatomical alteration in the spinal column and encephalic centres, nitrous oxide produced physiological phenomena—a loss of certain reflexes, such as skin, conjunctival, persistence of the patella, sometimes its exaltation, development of ankle clonus, the occasional development of clonic and tonic contractions, opisthotonos, emprosthotonos, and occasional transient pareses and hemipareses; all symptoms of extreme significance and interest. About the cardiac and vasomotorial systems there were very important facts to be considered. Regarding nitrous oxide as an asphyxiant, it had been customary to caution persons with weak hearts against its use, and indeed were it a member of that class it would be most detrimental in nearly every form of heart and pulmonary disease. There were several ways of observing the heart's action,—placing one hand upon the chest, removing the chest wall and watching the viscus in its pericardium, taking cardiographic tracings, and the less satisfactory method of recording the pulse at the wrist or elsewhere, either by the use of a sphygmograph or simply trusting to the finger, and these, if carefully carried out, showed that the heart was but little affected by nitrous oxide. If an animal were made to inhale until the respirations grew slower and slower, and finally ceased, the heart would be found to beat steadily on in marked contrast to its laboured, tumultuous action during the conditions of apnœa. In the sphygmograms the normal pulse tracing consisted of the initial rise as the tidal wave distended the artery, and the gradual descent as the tidal wave passed onwards, which descent was marked by secondary waves, partly those due to oscillation and partly due to reflux of blood driven back by the obstruction caused by the capillaries. There appeared to be a lessened tension evidencing a lessened tidal wave, this lessened tension being shown

by the greater acuteness of the initial curve, the dicrotic wave being placed lower down the curve, and the dicrotism increased, while to the finger the lift was perceptibly diminished. These results were at variance with much that had been published elsewhere. The rhythm of the heart, at first accelerated, usually returned to its normal rate during narcosis, or dropped a few beats. The blood pressure under nitrous oxide must next be considered. For the first period but little change occurred. Later on, there was a gradual fall in blood pressure, a fall which, although occurring throughout the whole body, was most marked in the splanchnic areas. Upon the animal's breathing air again a short gradual recovery of blood pressure took place. Control experiments made upon curarised animals showed that when they were rendered apnoëic blood pressure at once rose and became extremely high, while the heart's beats became weaker and weaker *pari passu* with increased blood pressure. Upon respiration nitrous oxide acted as follows: the respiration grew slower, and at first fuller; as narcosis progressed they became still more retarded but less full, and at length they ceased. At this point the heart still beat, and if a gentle pressure were made upon the thoracic parietes respirations were resumed, and, provided access of air were allowed, continued, and consciousness was regained. This was wholly different from the wild convulsions incident upon a correspondent period of apnoëa, and strongly suggested that the cessation of respiration under nitrous oxide was due to a sedative action exerted upon the medullary centres. Having thus reviewed the subject of the action of nitrous oxide, he would point out the practical deductions they were justified in drawing from it. How far was nitrous oxide contra-indicated in organic heart disease? Broadly, the matter might be considered under two heads:—(1) When the heart muscle was diseased. (2) When the valves were diseased. With the overgrowth of muscle there was usually some thinning of the walls of the heart. A person having such a heart took nitrous oxide, and as a result his heart beats were but slightly accelerated, the blood tension was slightly lowered, while the medullary centres were subjected to the influence of a sedative. If, however, as Dr. George Johnson erroneously asserted, nitrous oxide acted as an asphyxiant, there would be an engorgement of the pulmonary vessels, and as a consequence a waterlogged heart, and the patient would be in urgent danger. Even in cases of fatty degeneration there was no reason why

syncope should be determined by nitrous oxide. His own experience was that cases of syncope were not usually associated with old fatty hearts, but occurred in persons in whom anæmia was present, and in those whose nervous system was more or less enfeebled. Syncope was a frequent and dangerous symptom of advanced valvular trouble, and upon the frequency or infrequency of these attacks he should decide whether or not to administer gas. The group of cases falling under the heading of functional heart disease were far more dangerous. Persons suffering in this way would take large quantities of sedatives without much effect: they were timorous, peculiarly liable to fear reflexes, and nitrous oxide had but a transitory effect on the cerebro-spinal axis. Another reason why nitrous oxide was often so unsatisfactory in these cases was that there was commonly a lack of due oxygenation of the tissues, and so when the full dose of nitrous oxide gas was administered there was a concurrent impoverishment of oxygen, which induced an amount of apnœa such as should be absent when gas was properly given. In cases of displacement of the heart by pericardial adhesions or pleuritic effusions, nitrous oxide gas from the friction of the thorax which the tonic spasm of the muscles might bring about, would be contra-indicated, and it would be wise while commencing with nitrous oxide to continue with ether. He had never found nitrous oxide when pure act as an irritant. He could find no record showing that any organic or functional lesions of the cerebral hemispheres or spinal cord interfered with the administration of nitrous oxide. That a small minority of persons suffered from severe headache after gas he could well believe, although he was apt to accept the accounts of such cases with a grain of salt. The one lesson of all others to be learned was to administer nitrous oxide pure and simple, all his previous remarks had referred to nitrous oxide narcosis, and not to the mixed narcosis of the agent and suffocation. Chloroform, whatever its merits, could not be used as freely as gas, nor could precautions as to posture, after effects, &c., be neglected as they could be in giving nitrous oxide. Ether, from its offensive flavour, its after effects and its too violent action upon the blood pressure, could not be taken in the hundred and one cases in which nitrous oxide proved itself a friend. He was told that one drawback of gas was the briefness of the anæsthesia it ensured, but he was not at all sure whether it was not one of its main merits, as it prevented laceration of the fifth

pair of nerves, which in very many cases was not free from danger.

DISCUSSION.

Mr. BAILEY said it was not worth while running the risk of sickness for thirty or forty seconds' anesthesia using ether, when they could get quite as long a time by simply using gas. He did not think an examination of the heart should take place, for if anything wrong were discovered it would make the patient more nervous. Dr. Buxton had said that they might give gas with a diseased heart. He (Mr. Bailey) had one distinguished lady as a patient for many years who would not have a tooth out because she had heart disease. He told her that she could not have it out without gas, for she would surely die. At last she had it out, but three weeks afterwards she died suddenly. Of course, if she had died under gas it would have been ascribed to the gas. Dr. Cruise's was a suffocating apparatus. They could not help having the whole mass of ether on the lungs at once, and the result was suffocation. There was no suffocation, however, about Clover's apparatus, and the administration was done as easily and happily as possible. He was quite sure that his anæsthetic friends would never give four ounces of ether for a tooth. In order to prolong anæsthesia, say from 45 to 60 seconds, they certainly would not, with proper administration, require more than half an ounce of ether. He was rather surprised to hear that ether was so valuable because they could have one tooth out, and the patient could do something in half-an-hour. A little time ago a dentist came to him with the toothache. The tooth was extracted and he went back to a lady on whom he was operating, and she did not know what had happened in the interval. As to the matter of sickness it must not be said that ether was better than chloroform in that respect. As to paralysing the respiration he was perfectly sure that ether stimulated the heart, but might paralyse the respiration. It would also absolutely produce faintness of heart. Mr. Clover tabulated the results of 5,000 cases of chloroform, and out of that number he only had two deaths ; so that he got a proportion of one in 2,500 ; whereas with ether he did not think there was more than one death in 25,000 administrations. No instance of death from nitrous oxide had ever been recorded, although he knew of 250,000 cases of its administration. The results given by the Hyderabad Commission were against all experiments here. He was delighted to learn what Dr. Hewitt was doing, and he thought the younger

men might look forward to some absolutely perfect anæsthetic. The particular admixture brought forward by Dr. Hewitt looked very well, but a mistake might have been made as to the air given with gas. He had himself kept up the anæsthesia for an operation lasting forty minutes with gas and air must be admitted under those circumstances. The mouthpiece was taken away in giving gas exactly the same as in administering ether. He thanked Dr. Buxton for his paper, for although it was complicated and perhaps difficult to understand, it showed that nitrous oxide was a pure anæsthetic independent of asphyxia. Somebody might die of it, but it would not be by asphyxiation.

Further discussion was then adjourned till the following morning.

Friday, August 23rd.

The PRESIDENT in the chair. The discussion on "Anæsthetics" was resumed.

Mr. COFFIN thought the chief interest of the discussion would centre in Dr. Hewitt's paper, seeing that the admixture of $\frac{1}{8}$ th of oxygen would open up almost a new era in their experience of gas. He would like to know how, when gas was given under pressure, the operator would be sure that the amount he had in the gasholder had really been exhibited to the patient, or how much had been lost by the extra pressure. It was somewhat misleading to say that the admixture took place under pressure. Certainly it was not strictly so. The expression "intrathoracic pressure" was not quite scientific. It would seem to be impossible for any additional positive pressure really to exist in the lungs under abnormal anæsthetic circumstances. One could conceive that an inspiration might occur, but he could not see how the natural contraction of the thoracic muscles could take place if there were really a positive pressure. He thought from what Mr. Bailey said as to the transition from the preliminary administration of gas to the administration of ether that Dr. Hewitt somewhat exaggerated the difficulties that this kind of administration presented, for he seemed to think there was considerable difficulty in passing from the gas to the etherisation an operation which Mr. Bailey gave them to understand was somewhat simpler and could be adopted with greater confidence. If it should turn out that they could give the mixture which Dr. Hewitt had described without the occurrence of asphyxial symptoms and could almost indefinitely prolong its initial administration, it would be a very

valuable addition to their anæsthetics, and he hoped that Dr. Hewitt would favour them with future remarks upon those points.

Mr. Fox said that he took chloroform thirty-five years ago for the removal of a cystic tumour. Sir James Paget refused to operate, saying it would be certain death. He then went to Sir James Ferguson and the operation was performed.

Mr. WEST said that nitrous oxide unquestionably had its virtues for lesser operations, and he was glad to think that Dr. Hewitt had amplified its uses in the direction of prolonging the anæsthesia. He had used ether occasionally in his practice, but in one or two instances it proved unsatisfactory. In the case of one patient it was forty minutes before perfect narcosis could be produced. In another the patient, a lady, displayed so much morbid sentimentality as to make it quite disagreeable to the physician who was present. He had occasion to use chloroform frequently, especially at the German Hospital, London, where scarcely anything else was used. Without the smallest apprehension they were in the habit of totally removing the uterus per vaginum, and performed total extirpation of the rectum, and also such delicate operations as the removal of fibroid glands, operations extending to between two and four hours in duration, under the influence of chloroform. In his private practice chloroform had been eminently satisfactory. The plan adopted was simply a convex wire with flannel over it. Of course by this means a large admixture of air was allowed. They should endeavour to adopt a perfectly horizontal position, for though it might be somewhat awkward for the operator, a little practice would overcome the difficulty, especially if the lower teeth were dealt with first. He had been surprised to hear so little allusion to nitrite of amyl as a restorative. He had the greatest confidence in it, arising from a simple incident. Sometime ago, having a retriever bitch with a large tumour in one of the mammæ, he had chloroform administered and proceeded to remove the tumour, which was about the size of a man's fist. During the administration evident signs of collapse set in; to all appearances the breathing stopped, and the heart's action seemed to be suspended. Artificial respiration was tried for some few seconds but without effect. They then applied a broken capsule of nitrite of amyl with a most advantageous effect. Scarcely a whiff or two had been taken before the dog showed signs of restored animation, and he was able to proceed with the operation successfully. He did not lay any great

stress upon his skill in bringing round this dog, although a physician said afterwards that he had three times operated upon dogs under chloroform, and each time death resulted. He thought success was due to the action of nitrite of amyl.

Mr. SPOKES said he had had eighteen or nineteen years' observation of the administration of anæsthetics. Chloroform was a most excellent anæsthetic, though unfortunately the death rate was higher than that of any other. It was easily carried about, a large quantity was not required, and it could be more easily given than ether. On an emergency, such as a railway accident, chloroform might be administered without any feeling of compunction. But when they had opportunities of arranging beforehand, and they had a distinctly more safe and not more unpleasant anæsthetic, he thought it unjustifiable to go out of the way to use chloroform. He would not justify its use in dental cases, except in rare instances where it was necessary to get complete relaxation of the muscular tissues, as for instance in taking out decayed wisdom teeth. Ether was a most valuable agent in connection with nitrous oxide, but for the ordinary run of dental cases they should confine themselves entirely to nitrous oxide with occasionally a little addition of ether. He was in the habit of giving a patient two or three inhalations of nitrous oxide if necessary on the same day with five minutes intervals of rest. Mr. Macleod deserved credit for venturing into an enemy's camp, but in that Association his views would not find more than a certain amount of reasonable support. In producing ordinary anæsthesia in dental cases the first essential was that the face-piece should fit accurately so as to prevent any admixture whatever of external atmosphere, and to produce narcosis as speedily as possible before there was any opportunity for asphyxia to develop to any marked extent. Ether might be very advantageously used in some cases in conjunction with the nitrous oxide, and there was no difficulty in adding a sufficient quantity to sensibly prolong the anæsthesia.

The PRESIDENT said that Dr. Richardson introduced nitrite of amyl at the National Dental Hospital more than twenty-five years ago. He was present when Dr. Richardson advocated its use as an anæsthetic agent, and an experiment was tried upon the then Dean, Mr. Canton, who very nearly went off in the rooms of the Hospital. Subsequent experiments convinced Dr. Richardson that it was not a safe agent as exhibited to the human subject. It might have a different effect upon animals.

Mr. WEST said he referred to it not as an anæsthetic but as a restorative.

Mr. COFFIN said the blowing in of gas under a certain amount of pressure, as in Dr. Hewitt's method, was the greatest safeguard they could have against the admixture of air, which was a great thing to be avoided. He also wished to confirm what Mr. Bailey said as to the fact that there might be sickness with almost any anæsthetic.

Mr. SPOKES wished to hear a little more from Dr. Buxton about an anatomical lesion occurring in the brain, and the tremendous pressure of the brain against the under surface of the skull. This might have some bearing upon a very important point with regard to the whole question of anæsthetics, viz., the occurrence of insanity after their administration. From time to time, patients recovering from an anæsthetic, gave the impression that they were on the border land of insanity. In such cases it was a question whether it was justifiable to give repeated doses of anæsthetics.

Mr. S. J. HUTCHINSON said anæsthetics should produce complete anæsthesia, should give the patient as little discomfort as possible during the administration and after the operation, and the anæsthetic which was safest should be used in preference. He was quite sure that the administration of nitrous oxide, giving a free expiratory valve, was the one that was pleasant to the patient. When combined with nitrous oxide a little ether was capable of prolonging the anæsthesia to a certain extent, but very few who advocated the use of ether would fail to admit that it most frequently caused sickness afterwards, and this was a disagreeable symptom which was very seldom caused by nitrous oxide gas itself. It was most essential that when the anæsthetic was administered ladies should not wear corsets. Everything about them should be absolutely loose. He would recommend practitioners to visit the patients at their own homes, so that after the operation they could remain in their own beds until they recovered. If chloroform was given, no doubt Mr. Clover's apparatus, which only allowed a four per cent. administration of chloroform, was the safest way of giving it. Many operators preferred the early morning before breakfast as the best time for the administration of chloroform, but his own success had been greatest when the anæsthetic had been given at about 12.30 or 1 o'clock, just before luncheon time. He knew that he had not taken enough care till quite recently to prevent patients going home before the bleeding had absolutely stopped. He was quite sure that the disrepute that

sometimes had fallen upon nitrous oxide of making patients sick had been entirely due to the fact that they swallowed blood, and was not caused by the gas. With regard to the use of chloroform he must distinctly support Mr. Spokes in saying that it was only desirable to use it in cases where the mouth was being forcibly gagged open for the extraction of difficult wisdom teeth, or for some operation which would extend beyond the time requisite for nitrous oxide. He did not, however, believe that any anæsthetic ought to be used for the sake of extracting fifteen or sixteen teeth at a time, because he was sure that the number of ordinary teeth that could be taken out under nitrous oxide was quite as many as any patient was able to bear.

Dr. STACK thought dentists ought to use every one of the anæsthetics. In his view nitrous oxide was not a certain agent on which they could rely for taking out even one difficult tooth. In the case of a badly broken crown, or anything of that sort, where they had to go after the roots, one inhalation of nitrous oxide was in many cases not sufficient to enable them to conclude the operation thoroughly and satisfactorily. If in such a case they went on to the second administration of nitrous oxide they used an agent entirely different from what they used at the beginning, because they then used nitrous oxide mixed with atmospheric air, and the action of that was very different from that resulting from the administration of nitrous oxide alone. It was said that there was no mortality from nitrous oxide, but there had been several cases of mortality, perhaps not from nitrous oxide, but from the use of it. Certainly two or three such cases had been recorded, but so far as nitrous oxide was concerned he would admit that the mortality, if anything at all, was a minimum. It had happened, however, owing to the speed with which the operator was inclined to carry out the operation, that he had either dropped a tooth into the larynx, or some other nice little thing, so that if the nitrous oxide itself did not produce serious consequences, it had at all events sometimes been the reason why those effects had ultimately been induced. It was manifest that there was some grave change in the blood under the administration of nitrous oxide, and some years ago Professor Yeo told him that that might induce in a child some tendency towards an anæmic condition. It, therefore, could not be asserted that because a patient did not die under the anæsthetic at the moment, it was at all proven that it had not done some harm. One great indictment against nitrous oxide

was that it was not fit for any operation that was likely to be other than one of the most simple character. It had been employed for the extraction of cataract, but oculists had almost entirely abandoned the use of it in that operation. Ether was of all the anæsthetics the most likely to produce sickness; but one point in its favour was that it was a stimulant to the heart, and was a good anæsthetic for administering in an upright position. The deaths recorded from ether had proceeded in the main from injudicious administration, from the anæthist not knowing what he was doing, and choking the patient by not giving sufficient atmospheric air. He was astonished to hear that the mortality from ether was only one in 25,000, for he was under the impression that it was one in 7,000. At all events it had a very much lower mortality than chloroform, but it did not follow that it did not do harm. It was not the mere sickness at the time that was the danger, but ether might possibly do very considerable harm when given to an old person who was not able to bear its administration. Taking, however, all classes of all ages from sixteen or seventeen to sixty or thereabouts, ether would seem to be by far a safer anæsthetic than chloroform, as far as the mortality went. Where ether did not succeed was in the case of heavy drinkers. There chloroform would come in like magic. He was therefore not at all surprised that their Scotch friends had a preference for chloroform. Ether was useful in dental operations where all that was wanted could not be accomplished with one administration of nitrous oxide. It afforded ample time to do everything that was wanted without any fear on the part of the operator that any fatal result would follow its use. The patient could also be placed in any position without fear of the heart failing. He used chloroform for his own children in preference to any other anæsthetic. Many young people viewed with terror the putting on of the face-piece in the administration of nitrous oxide. Chloroform was also useful as a prelude to administering ether, preventing as it did the preliminary spasms of the throat, the ether could then be given without the patient's struggling at all. Bi-chloride of methylene had never been proved to be a safer anæsthetic than chloroform, and statistics shewed that chloroform was a much better.

Mr. VANDERPANT said he had administered nitrous oxide with more or less frequency since 1868, when it was first introduced into this country from America. He found that the best time for its administration was about two hours after a meal, though once or

twice he had been compelled to administer it at other times. On one occasion a butler came to him scarcely *compos mentis*, partly from pain and partly from alcohol. No ill effects followed the administration of the nitrous oxide. Occasionally there were some symptoms not altogether distressing but irritating to the practitioner, where a good deal of nervous excitement was produced. A medical friend on one occasion suggested a strong cup of tea, and it had a very beneficial effect on the patient.

Dr. BONWILL said his own experiments had taken a line which was, he thought, unique, viz., in regard to rapid respiration as a means of annihilating pain. It had been ascertained by experiment that rapid respiration for one minute previous to the administration of nitrous oxide, chloroform, or ether, would reduce the quantity required and lessen the chance of asphyxia. He did not think Dr. Hewitt's admixture of nitrous oxide and oxygen would produce perfect anæsthesia. In experimenting on chloroform, he found that he could operate upon himself, destroying pain to all intents and purposes, but increasing the sensations of touch and sound. The instrument he was using seemed to him like a hoe, and the cavity like a bushel basket. At that time he did not know what analgesia was, the effect of chloroform not having been noticed at that point. One day, whilst performing an operation—removing a nerve—he hurt the patient very badly, and brought on rapid respiration. He seized the idea immediately, that that was nature's anæsthetic, and for the last twenty-eight years he had used that one thing alone for the excavation of sensitive dentine. He had not had reason to use anæsthetics for that purpose. That led him sixteen years afterwards to ask certain questions with regard to nitrous oxide gas, and it occurred to him that by simply taking ordinary air, and increasing the number of respirations from 20 to 100, if he could prevent the heart from corresponding with the number of respirations, then he could produce what he would call analgesia, or the destruction of pain, to such an extent that he could extract a tooth. In a few days he had a chance of trying the operation, and it was a perfect success. It took him a long time to believe in it, but since then he had never extracted a tooth in any other way than simply by rapid expiration, and he had extracted from one to seven at a sitting. Anyone who had studied physiology would know that in rapid respiration an amount of carbonic acid gas was retained in the blood. Rather than give oxygen as Dr. Hewitt proposed, he

would give rapid respiration one minute before giving the nitrous oxide. There would then be no risk of putting a lot of pure oxygen into the system. His idea was that inasmuch as the heart itself did not increase in the number of pulsations as he had proved by the sphygmograph, an excess of carbonic acid gas passed into the circulation, and being kept back by the heart, owing to the number of pulsations not being increased, produced this effect upon the nerve centres. It was found that when they commenced a rapid respiration the pulsations bounded up very high and then went on rapidly diminishing until there was scarcely a ripple upon the surface. There was no asphyxia about it at all, as was the case with nitrous oxide gas. He very recently heard of a case where the effect of nitrous oxide gas had been most profound, but after the tooth was extracted the dentist looked at the valve and found that the patient had been breathing ordinary air instead of nitrous oxide. A beautiful illustration was furnished by an operation on an elephant, the pain of which was so severe that he dashed round generally. A few days afterwards when he was brought out to have an operation performed he prepared himself for it. As soon as he saw there was a cut he inflated his lungs and held his breath until it was over, and then got up as placidly as possible. This was nature's anæsthetic. So when he wanted to extract a tooth he would say—"Let me put this instrument on your tooth. Now give one rapid inhalation—just one" and the tooth was out in all ordinary cases. In many cases a profound effect would be produced by using the ordinary mouth-piece having the bag connected but nothing in it. About forty per cent. were susceptible to this kind of mesmerism. He hoped a fair trial would be given to the method of rapid inhalation.

Mr. HENRY said had he known that sickness would not be attributed to the effects of nitrous oxide he should a few days ago have acted very differently in the case of a child from whom four days before he extracted several roots under gas very successfully. A second appointment was made to extract some more, but the mother begged that gas should not be given, as it made the child so sick. Had he known that that sickness had no connection with gas he should certainly have persuaded the mother to allow gas to be given again, and would have taken more precaution to prevent hæmorrhage. Evidently the child suffered from swallowing blood after the operation.

Mr. DENNANT said that Dr. Hewitt had pointed out to them

precisely what they very much wanted in connection with nitrous oxide. One weak point in its administration was that it was generally given cold, straight from the bottle, which had a disagreeable effect, to say the least, upon the patient. He had always given it from a gasometer, and he urged all who could do so to place the gas in the gasometer a sufficiently long time for it to acquire the temperature of the surrounding atmosphere. That little attention would add a great deal to the comfort of the patient and the success of the operation. It took a little longer to supply the patient from the gasometer than from the ordinary compressed gas, but on the whole the anæsthetic effect was longer. Considerable attention should be paid to what Dr. Bonwill had said, and he hoped to have the opportunity of seeing a practical demonstration from Dr. Bonwill of such an interesting and novel way of producing painless operations.

Mr. COXON asked Dr. Bonwill whether he would carry out his plan of very rapid respiration in the case of a phthisical person?

Dr. BONWILL said if the lungs had a capacity to sustain life he should do so. Instead of its being detrimental to the heart's action it was just the reverse.

Mr. SHERWOOD attributed much of the success of Dr. Bonwill's process to the exercise of nervous will power on the patients. He was only surprised to see how well Dr. Bonwill looked after having carried out this treatment for twelve years.

Dr. HEWITT was extremely obliged to the members for the very kind way in which they had received what was really, so far as he could see, merely experimental work. He had been told that patients who had been anæsthetised with oxygen and nitrous oxide had said that they were really conscious during the whole of the process, but he thought he could prove incontestably that 99 per cent. of the patients were anæsthetised. The want of pain was analgesia, but the want of consciousness was anæsthesia, and he maintained that with this mixture both states were attained. The signs to be depended on when removing the face-piece were somewhat difficult to determine, but in the vast majority of cases there was flaccidity of the extremities. In the early stages there was spasm of the upper eye-lid in attempting to raise it, but that passed off, and eventually the eye presented an unconscious appearance. The pupil was not as widely dilated as under nitrous oxide, but it was slightly so, and the eyes were occasionally perfectly fixed in a certain direction. At

other times the eye-balls presented slight oscillatory movements. In some instances instead of perfect flaccidity, there was slight rigidity, and even on the application of the forceps there might be a slight reflex movement of the patient, but so slight as not to be in any way inconvenient. The persistence of reflex action was a most important point. The corneal reflex was usually present, which pointed to the fact that the anæsthesia was not of a very profound nature. He believed that the patients were mostly absolutely unconscious of everything that was going on as well as of the perception of pain. The difficulty of knowing when to remove the face-piece proved the valuable character of this anæsthesia. The patient appeared to be calmly asleep, and those who had been accustomed to see the ordinary effects of nitrous oxide could hardly believe that an anæsthetic state had been induced. Some people believed that giving nitrous oxide as a preliminary to ether was an extremely simple business, but cases occurred in which difficulties arose. There was nothing given to the patient to support his respiration unless they put in fresh air or oxygen, and it was on the regulation of the quantity of air admitted between nitrous oxide and ether that the success of the administration depended. He had used the expression "intrathoracic pressure" because he could not think of a better, but he was quite willing to adopt any expression so long as it conveyed his meaning. What he meant was, that if the gasometer was weighted, each inspiration which the patient took was one in which nitrous oxide was forced into the chest. He thought it was impossible to force nitrous oxide or any gas into the thorax without increasing the pressure. With regard to what Dr. Bonwill had said, he imagined that the sudden expansion of the chest must in some way affect the cerebral circulation, possibly by accelerating the return of the blood from the brain. With regard to chloroform, he never employed it if he could possibly avoid doing so. He used ether in preference for general operative surgery. He believed it was comparatively safe in the hands of those who were skilled in its administration, but what he wished to emphasise was that they were not discussing anæsthetics to be employed by skilled people but anæsthetics which might be employed by those who had not had very much experience. To put an anæsthetic, like chloroform, into the hands of such a person was hazardous in the extreme. One of the most valuable anæsthetics was the A.C.E. mixture, consisting of 1 of alcohol, 2 of chloroform, 3 of ether. In cases in which chloroform

should be employed in preference to ether, it was nearly always possible to give the A.C.E. mixture, and then accidents would far less frequently occur. If any mixture were used containing chloroform, it should be given as if it were chloroform, and then *cæteris paribus*, it must be safer than chloroform ; but if they gave an anæsthetic mixture, consisting of constituents with different rates of evaporation, and gave them as if they were definite and unalterable anæsthetics, they would be falling into great error, and would very likely meet with fatal results. Mr. Moss, of King's College, had told him that he had given the A.C.E. mixture certainly over 10,000 times, using it as a general anæsthetic for all cases, and he spoke very highly of it indeed. It had a special advantage in those cases in which chloroform was preferable to ether, and those who might have to anæsthetise patients with morbus cordis or some pulmonary affection, would find that it would be very well borne indeed. It was especially valuable for children, and in those dental cases in which chloroform would otherwise be selected.

MR. BOWMAN MACLEOD said the one great reason why so many adverse cases had been attributed to chloroform was the fact that it was so simply administered. It was easily given, and therefore, it was thought that anybody could give it. That fallacy had, however, been found out and acknowledged, and it was day by day drifting into the hands of those who were trained to administer anæsthetics, and so would gradually reach its true and proper place. He suggested a dash of ether if the heart became depressed, simply because ether in its first exhibition was a heart stimulant. In a prolonged case of etherisation it was no longer a stimulant : it came back very much to the same classification as chloroform, and the action of the heart became depressed although at a much later stage than in the case of chloroform. He was not, himself, an anæsthetist, but like themselves he was a dentist who operated when an anæsthetist was giving the anæsthetic. In his own practice certainly much more nitrous-oxide was given than chloroform, for the simple reason that there were more of the minor operations in dentistry performed than of the major, and in the former case nitrous-oxide was a very useful anæsthetic. His experience was that he had had more cause for anxiety in administering nitrous-oxide than when an anæsthetist administered chloroform for him.

There had been instances of sickness being induced by the exhibition of nitrous-oxide before a drop of blood was shed, so that

the blood could not be blamed for having caused sickness in those cases.

The discussion then terminated.

DEMONSTRATIONS.

At the Dental Hospital in Queen's Road, Dr. FREDERICK HEWITT demonstrated the effect of a mixture of nitrous oxide and oxygen as an anæsthetic. Both gases were given under pressure, in the proportion of $\frac{1}{8}$ oxygen to $\frac{7}{8}$ of nitrous oxide. A number of teeth were extracted from the mouths of several patients anæsthetized by this mixture, and the operations were in every respect a perfect success. Curiously enough this mixture causes none of the symptoms of intoxication or excitement which a mixture of nitrous-oxide and atmospheric air does. The patient, when under its influence, laid exceptionally quiet, free from spasm and natural in colour and general appearance.

Dr. BONWILL essayed to produce analgesia in the cases of two girls by his method of rapid respiration. The patients are required to breathe very deeply and very fast for a period of at least one minute, at the end of which time Dr. Bonwill asserts the extraction of one or more teeth can be done without any pain, although the patient remains conscious of what is going on. In these two cases, however, the patients proved too nervous for the experiment and the occasion, and could not be induced to breathe satisfactorily to Dr. Bonwill. He therefore declined to operate upon them. Afterwards Dr. Bonwill undertook the process of rapid respiration upon himself. He went through it very energetically for nearly three minutes, at the end of which period he was found, on pinching him, pulling out hairs and touching his conjunctiva, to be quite free from all sense of pain.

Mr. G. BRUNTON demonstrated extractions under an anæsthetic other than gas, with the patient in the "Howard" position, *i.e.*, with the head hanging completely, in a position of full extension, over the end of the operating table. This position has the effect of reversing the relative positions of the upper and lower jaws. The lower jaw is uppermost. This requires an assistant to hold the tongue away by means of a sponge. The advantage of this position consists in that nothing can possibly find its way inadvertently down the air passages. Any blood which gravitates

downwards finds its way out either by the mouth or through the nose. (This "Howard" position is that in which Dr. Howard recommends the apparently drowned to be placed when the attempt to restore them is being made, and also in which he recommends patients who show signs of asphyxia when being anæsthetized to be placed, as it is a sure way to the opening of the air-passages.)

The most interesting of the demonstrations in conservative dentistry was that of Dr. Bonwill, of Philadelphia, U.S.A., who filled a large anterior interstitial cavity in a first molar with gold. Considerable time was spent in removing an old amalgam filling and in shaping the cavity. After this was finished, Dr. Bonwill put in a magnificent contour filling in the exceedingly short time of fifty-three minutes. For removing the amalgam and shaping the cavity Dr. Bonwill used fine cut round burs in his own dental engine revolved at a rapid rate by foot. He explained that it was not his practice to fill such large cavities in back teeth with gold, as he would use amalgam, but he was doing this particular case simply for purposes of demonstration. After preparing the cavity, the rubber-dam was applied, being fixed round the tooth to be operated upon with the aid of a clamp, and round the three teeth anterior to it. Dr. Bonwill began filling at 12.15 o'clock with Abbey's No. 20 cohesive gold foil, single thickness, from a large shallow retaining point situated under the outer cusp, near the masticating surface. He packed the gold throughout with his improved machine-mallet worked at a high speed. His pluggers were smooth oval-faced foot-pluggers, and he used the "sole," "sides" and "toe" of the foot as suited his purpose best at the moment. He worked across from the retaining point, then upwards along the back of the cavity towards the cervical edge. Then he "wove" the cohesive gold over the cervical edge, and completely lined the cavity right up to all its edges with it. Then Abbey's soft non-cohesive gold foil was rapidly packed in with the same mallet in exactly the same way, but working now in the usual manner, from the cervical region of the cavity downwards towards the masticating surface. This non-cohesive foil was No. 5, and folded so as to bring it up to No. 40. After a considerable amount of the remaining cavity had been very rapidly filled with this foil the remainder was finally filled with the cohesive foil, the same as was used at first; this portion of

cohesive gold being united to that which had been put in at the commencement of filling. The fine contour filling which resulted, as far as inserting the gold was concerned, was finished at 1.8 o'clock, but, as Dr. Bonwill remarked, he made no special effort to work against time, and lost a certain amount of time in demonstrating to the onlookers, and in getting together what instruments he required. He had, however, the advantage of an able operator as "feeder" to convey gold to the cavity.

Mr. HERN demonstrated the insertion of a porcelain inlay, both in a tooth out of the mouth and in the mouth. The tooth he operated upon in the mouth was a left upper canine, on the labial surface of which was a medium-sized cavity, at some distance down from the edge of the gum. The cavity was burred out perfectly round by means of a special cylindrical burr, some decay at the "floor" being removed with excavators. This done, the cavity was found to be unnecessarily deep for the inlay, so a "floor" of phosphate cement was laid down. This was trimmed by means of the same special burr. The porcelain inlay was made from the face of an artificial tooth, as the inlays supplied for the purpose did not happen to match the tooth in colour. The piece of porcelain was fixed to a mandrel with shellac, and turned down in the dental engine by revolving it under water against a flat corundum file. When the porcelain was reduced to a size very slightly larger than the cavity, it was ground into the cavity in the tooth, while still attached to the mandrel, with finely ground pumice. In this way a well-nigh imperceptible joint was secured. The inlay was pressed into place with the least possible amount of phosphate cement smeared round its edges. Mr. HERN had a preparation to show the relative appearances of the various materials used for filling teeth, including porcelain. It consisted of a set of front teeth, with similar cavities in their faces, filled with the various stoppings, while all the other materials were very prominently manifest, the porcelain inlay was very nearly imperceptible.

Messrs. JONES & LENNOX of Cambridge, inserted a bridge of four front teeth of which all the metal work was platinum. It was fixed to the two lateral incisor roots by means of ports soldered to the bridge and secured in the roots first with a little phosphate cement at the ends and then lower down with copper amalgam. A ring, also soldered to the work, encircled the edge of each root without gripping it. These were also filled in with the copper amalgam. Mr.

Jones also demonstrated his new pneumatic mallet in packing cohesive gold.

Mr. MANSELL fitted a distal interstitial left upper canine with cohesive gold pellets. The neighbouring tooth (first bicuspid) had been lost. The instrument used for packing was chiefly Dr. St. George Elliott's engine-mallet driven by a Shaw engine.

Mr. HARRISON filled a left 2nd upper molar crown cavity with Williams' crystalloid gold.

Mr. A. B. HARRISON, of Newcastle, showed a man aged 19, who, at the age of 6 years, had had the whole of the right half of the lower jaw removed, including the right lateral incisor tooth. The deformity resulting was only moderate in amount, and the patient's inconvenience apparently not great. The scar tissue was perfectly supple, but a band of soft tissue ran down from the cheek on that side to the floor of the mouth. Suggestions were asked as to the practicability of improving the patient's condition by means of a mechanical contrivance.

Dr. CUNNINGHAM, of Cambridge, showed the same case of implantation which he showed at Dublin last year. It is now two years since the operation was performed. The tooth is a first left upper bicuspid. It is still perfectly firm and serviceable. The gum does not quite come down to the normal position at the cervix, but that is what would be expected from the loss of some of the alveolus by absorption *previous* to the operation of implantation. On enquiring from the patient, who is a very intelligent man—a barrister, it was ascertained that, although he does not think the operation worth doing in the case of a second upper bicuspid, yet he thinks it quite worth doing in the case of a first upper bicuspid, and if he had the misfortune to lose his first upper bicuspid on the other side, he would again submit to the operation of implantation for its substitution. This patient is Case III. in Dr. Cunningham's table of statistics. The implanted tooth had been three hours out of the mouth of its original possessor before being implanted, and during that period had been kept in a 1 in 1,000 solution of mercuric bichloride.

Mr. CAUSH showed a preparation of "all-gold" crowns, and Dr. Cunningham showed a preparation of the same, and also of gold crowns, porcelain-faced.

Mr. HARRISON showed a preparation of "Logan" crowns, "Bonwill's" crowns, "Balkwill's" crowns, gold crowns, platina and

amalgam crowns, a crown with a modification of his own, "Büttner" crowns and porcelain inlays.

Dr. REDMAN showed a preparation of gold crowns in their different stages, and the same with porcelain faces. Mr. J. H. Whatford showed a similar preparation.

Mr. LENNOX showed a preparation of porcelain-faced crowns which were to be fixed with copper amalgam.

Mr. COXON, of Wisbeach, showed a new screw-clamp, for attaching the flexible tube to a gas-bottle.

Mr. CAUSH gave a very interesting demonstration, or rather series of demonstrations, in cutting sections of teeth in the hard state. The interesting feature was the way in which sawn and filed sections were reduced to a condition of extreme tenuity. This was done by grinding down the section with fine pumice-powder and water, by hand, between two square pieces of *ground* glass. The operation was conducted on a table, and the upper square of glass was worked upon the lower with a circular or rotary action. Sometimes small rubber suckers were fixed to the outer side of the upper plate for obtaining a more convenient hold upon it. Sections done in this way were shown by Mr. Caush under a large number of microscopes, and very beautiful they were. The method was invented by Mr. Charters White. Altogether the demonstrations were very interesting and varied, and equalled, if not surpassed, anything we have seen in that line before.

EXTRACTS.

ACROMEGALY.

ALTHOUGH there may be not much virtue in a name, yet the man who first gives a name, even though it be his own patronymic, to a clinical group of signs and symptoms, confers a real benefit on clinical medicine and pathology. Acromegaly, considered as a word, is cacophonous, but Dr. Pierre Marie did a service to medical science, if not to philology, by its introduction. So long as some unusual complex of symptoms has no name, each case is apt to be regarded by its observer as an isolated case of merely curious interest. As soon as a name is applied, a knowledge of the condition is popularised. A reader who will not be at the trouble to read "a report of a case in which there was hypertrophy of the head, hands, and other parts" may yet have his curiosity aroused by the novel term acromegaly, and he will be prepared to recognise a case

of what has now become for him a distinct disease. The name is not yet more than three years old, yet the number of cases since recorded is considerable. In this country we may refer to the two cases reported to the Clinical Society by Mr. Godlee and Messrs. Hadden and Ballance respectively last year, and the two cases shown to the Birmingham and Midland Counties Branch of the British Medical Association by Drs. Saundby and Simon. The most recent case recorded abroad is one observed by Dr. Farge, of Angers, and reported by him with illustrations in *Le Progrès Médical* for July 6th. The patient was a man, aged 31, who dated the development of his deformity from a severe accident while tree-felling in his twenty-fourth year. He was confined to his bed for six months, and when he got up he found that his head was increased enormously in size, and that his back was humped. He was admitted into the Hôtel Dieu in Angers for slight bronchitis last February. He then stood 5ft. 1in., had an enormous head sunk between his high shoulders, and projected forward by the curvature of the spine, which was uniformly kyphotic from the vertebra prominens to the sacrum. His limbs were short and large. His face suggested that of an animal but was not without intelligence, and he spoke distinctly in a deep hoarse voice, though the tongue and lips were much enlarged. There was no hypertrophy of the thyroid. He complained most of stiffness and discomfort in the back, and these symptoms were considerably relieved by suspension.—*British Medical Journal*.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from June 1st to June 30th, 1889 :—

					London.	National	Victoria.
Number of Patients attended ...					—	1935	1159
Extractions	Children under 14	...	...	...	410	240	698
	Adults	...	...	...	2000	450	
	Under Nitrous Oxide	...	...	...	867	891	134
Gold Stoppings	...	...	...	...	345	98	85
Other Stoppings...	...	...	...	...	1186	406	149
Advice	...	...	...	...	127	414	—
Irregularities of the Teeth	...	...	...	...	106	119	—
Miscellaneous and Dressings	...	...	...	...	304	112	284
Total					5,345	2,730	1,350

THE DENTAL RECORD, LONDON: SEPT. 2, 1889.

A WORD TO STUDENTS.

IT has been usual to make the September issue of this journal what is popularly known as a "Students' Number," and it may perhaps be well to offer one word of explanation why the usual custom has not, in the present instance, been carried out. Some years ago, when dentistry was not in the robust state that it is at present, information on the subject of dental education was by no means general, and there was perhaps some necessity for a special students' number; but now-a-days we fail to see that the great majority of our readers should be burdened with a mass of dry information which is neither interesting nor necessary. The student who wants to know what paths are open to him, and how he may most profitably employ the time at his disposal, may supply himself with a veritable blue book of minute directions and general advice by simply writing for the Calendar of the Dental Hospital which he purposes attending. We have received several of these, and the tendency appears to make the information contained in them fuller and more complete year by year. If, in addition to the dental calendar, anyone chooses to apply for the regulations of the various examining bodies, he will be supplied with an amount of special literature fairly calculated to puzzle the brain of any ordinary mortal.

But although we do not offer the dental student in our pages a mass of information which he can easily obtain—and probably ere this has obtained elsewhere, we yet venture to submit one or two considerations for his notice which may not be altogether superfluous.

The youth who selects dentistry as his future vocation in life, chooses probably the *only* professional path in this country which is not inconveniently crowded. We do not

assert that there are not sufficient dentists, but we firmly believe that there is still room for a large number of practitioners who shall prove themselves of ability *above the average*, with fuller hope of success than in any other professional career. This could be easily proved were it convenient to do so here; suffice it to say that in the experience of those connected with teaching, it never happens that a brilliant dental student is left without remunerative employment immediately after the completion of his education. This should be an incentive to thorough earnestness of work, with a determination to make the utmost of all the opportunities thrown in the way of the student in every department of his work.

We would impress upon every dental student at the very commencement of his career that the foundation of his success lies in completely mastering his *mechanical work*. It is here that he trains his hands, head, and eyes for the difficult work which he will by-and-by have to grapple with. Too many students enter a dental hospital with the veriest smattering of dental mechanics; some are incapable, some are indifferent, and others profess a supercilious disdain for what they consider the subsidiary portion of their education. This is a mistake which in many instances can never be rectified. How a young practitioner hopes in after life to do his duty to his patients by transferring the whole of his mechanical work to the judgment of his "workman" surpasses comprehension; for if he is not conversant with the *details* of the work, how can he possibly deal with a difficult case? Someone answers, "He gets through it as best he can." Quite so, but his *best* is often only too palpable in the hideous deformities which people—with only too much truth—call *false teeth*. The remedy is not far to seek, and surely lies in emphasizing—both in hospital teaching and examination—the enormous importance of a thorough mechanical education.

Two important questions which not only arise in the minds of students, but are often bluntly asked by them are: "Is the L.D.S. diploma sufficient to practise with?" "Do

you advise me to take a surgical qualification in addition? and if so, why?" To the first we would answer that the curriculum for the L.D.S. has produced, and is still producing some of the most able and honourable members of our profession, and that any student fulfilling the conditions for the dental licence (we speak of the English licence, as being the only one with which we are fully familiar) may become a thoroughly competent dentist. But although this is true, we have no hesitation in strongly advising every student, who can possibly spare the time, to obtain in addition a general diploma in medicine and surgery; and we think we have strong grounds for doing so. If, as is generally acknowledged, dentistry is a specialty of surgery, it must be of inestimable advantage to the dentist to be at least as highly educated as the medical man who practises any other specialty. The well-worn argument that all the medicine and surgery in the world will not teach a man practical dentistry may be promptly brought forward by some of our readers. But if this argument has any sound basis, why did those who instituted the English L.D.S. introduce medical and surgical subjects into the curriculum and examinations? and why has every other examining body since copied their example? If dentistry is *not* a branch of surgery the sooner we find our proper level the better. If a dentist's work is on a par with a jeweller's—combining a certain amount of mechanism combined with art in *saleable* quantities—by all means let us not be ashamed of our position, but honestly alter the system of education and examination, and institute a test, something on the lines of a *plumber's certificate*. This is evidently the sort of thing which a very small minority of our number seem to want, although they appear to be afraid of formulating their wishes in plain language; but we rejoice to think that those who have laboured most for dental reform have ever been advocates of a liberal education, seeking to establish dentistry as a part of the great profession of medicine, with aims and aspirations at once far-reaching and honourable. There is, at first sight, some plausible ground for advocating the L.D.S. only, because of the increased time

at the disposal of the student for purely dental work, but to suppose that the doubly qualified men must be necessarily backward in practical work is entirely erroneous. It would be invidious to mention names, but men eminent as thoroughly practical workers recur to one's mind in profusion; and there is probably not one of our readers who has not had sufficient ocular proof to abundantly disprove the suggestion mentioned. If there is room for complaint on this point—and we do not deny that there is—the remedy lies in the amendment of the curriculum. The present curriculum cannot live long; it must of necessity be reformed in several respects.

Finally, we would urge the student to make the most of his hospital career, for it is here that he is brought face to face with the actual work which he will have to encounter in after life, and has the opportunity of performing day by day the very operations which will confront him hereafter. Let him be diligent in his work, for half-hearted enthusiasm is but sorry stuff; and the experience of a large hospital may be of inestimable value in the narrower sphere of private practice. The patients who entrust themselves to his care may be paupers, but they should be treated as the most valued and lucrative private patients. The amount of courtesy shown to a hospital patient by a student is, as a rule, the sum total of the same quality exhibited afterwards in his own consulting-room. Let the student practise that deferential manner which ought to characterize the gentleman and professional man; let him strive to do the very best work of which he is capable; and if he should succeed in accomplishing these things, he will be laying the foundation of a career which will be not only satisfactory to himself, but—what is much more—of use to others.

The Discussion on Anæsthetics at Brighton. The meeting of the British Dental Association at Brighton will be memorable for the prominence given to "Anæsthetics," and we have no doubt but that the treatment of the subject by the distinguished readers of the

several papers will receive considerable attention, not only in dental circles—but in the medical world generally. Our Scotch brethren have been “very sweet” on chloroform as a dental anæsthetic, and have in several instances felt aggrieved at the onslaught made upon their favourite by those hailing from this side of the border. The platform at Brighton was broad enough—and we may add, not wanting in sufficient importance—to admit of the thorough threshing out of the subject. As we consider that the principal interest of the meeting centres round the papers and discussion on “Anæsthetics,” we are happy to be able to give at the first opportunity, and in one issue, a full report in abstract of the entire treatment of the subject, together with an account of the demonstrations. The social elements and details of the meeting must for once stand in the background, and we trust that the course we have taken will meet with the approval of our readers.

GOSSIP.

PIC-NIC OF THE MANCHESTER DENTAL STUDENTS.—The annual pic-nic of Past and Present Students was made on Thursday, July 11th. Charming weather graced the occasion. Our fraternity left the Dental Hospital under the presidentship of Mr. Linnell, House Surgeon, journeying by stage coach to Warrington. Here Mr. Fletcher kindly conducted the party over his extensive works, showing and explaining the various gas appliances which his fertile brain has produced. The easy manner with which he melted down handfuls of gold metal with his powerful blowpipes was watched with great interest and astonishment, $\frac{1}{4}$ -inch wrought iron yielding with similar rapidity to their power. Being hospitably welcomed to his private house, the party observed the very complete manner in which it is fitted throughout with gas appliances. A farewell was then taken of Mr. Fletcher, the coach was mounted, the bugle sounded, and we were soon speeding on our way to Lymm. Here a section of the Manchester Ship Canal was visited, the gigantic digs of the steam navy being seen in their sweeping scope. Dinner was then partaken of at the Plough Inn, and after a little music had whiled away the evening, the coach was quickly rolling homewards, a most enjoyable day having been spent.

WE have received the following announcement for publication :— We, the undersigned, do hereby give notice, that according to the resolution passed at the Washington meeting, September 9th, 1887, the tenth International Medical Congress will be held in Berlin. The Congress will be opened on the 4th and closed on the 9th day of August, 1890. Detailed information as to the order of proceedings will be issued after the meeting of the delegates of the German Medical Faculties and Medical Societies at Heidelberg on the 17th, of September in the current year. Meanwhile, we should feel sincerely obliged, if you would kindly make this communication known among your medical circles and add at the same time our cordial invitation to the Congress.—Von Bergmann, Virchow, Waldeyer.

It is with sincere regret that we note the death of the wife of Mr. J. J. Andrew of Belfast, which occurred on the 8th of August, and was due to puerperal convulsions. Much sympathy doubtlessly goes forth to Mr. Andrew from his numerous friends in his hour of sorrow.

At the first annual convention of the Ontario Dental Society the members appear to have been very much exercised as to the ethical (!) mode of advertising. Eight distinct forms of advertisement were formulated as being objectionable ; we would very humbly suggest that a *ninth* be added at the next meeting to the effect that advertising *in any form* is especially objectionable.

THE following paragraph appears in the *Chemist and Druggist of Australasia* :—The dentists of New Zealand have resolved to form an Association, and a conference will be held in Dunedin at an early date. It appears that in New Zealand the Dental Act appoints a registrar, but makes no provision for prosecutions against violators of the Act, and in seeking to protect themselves, the dentists claim to protect the public from insufficiently educated persons practising as dentists. An amended Dental Act is to be introduced, in which chemists will be interested.

A CORRESPONDENT sends us an account of a somewhat novel form of dentistry. We have unfortunately no acquaintance with Mr. Seth Green and cannot vouch for his dental performances :— Drawing a fish's teeth strikes one as being an odd performance ; but it was done in the United States, at the Rochester Aquarium, by a Mr. Seth Green, described as "the veteran fish-culturist." The fish in question was a handsome trout, which was reported to show an extremely pugnacious disposition. The only way to cure him of his vicious propensity for biting was to deprive him of the means of wounding his companions. So he was caught, had his teeth extracted, and was put back again—"since which time," we are told, "the pugilistic fish has ceased to attack his associates." It says something for the amiability of his associates' tempers that they do not "go for him" now that he is toothless.

OBITUARY.

C. SPENCE BATE, F.R.S. L.D.S.Eng.

WE have lost a conspicuous figure in the dental world in the person of Mr. Spence Bate of Plymouth, who died at his residence, Rock, on the 29th of July, after a severe illness of three weeks duration. He had been failing in health for some little time, but anticipated a speedy restoration just at the moment that he was struck down with the attack which ended fatally. The cause of death was intestinal obstruction due to cancer.

Mr. Spence Bate had been in practice in Plymouth for many years, and had gained a considerable reputation as a scientist in the field of zoology. He had also attained to the distinction of the Fellowship of the Royal Society, which is an honour which has rarely been bestowed upon members of the dental profession. The dental section of the International Medical Congress held in London in 1881 had Mr. Spence Bate as its Vice-President ; he was President of the British Dental Association in 1883, and presided over the Odontological Society in 1885. He had written several papers on dental subjects, the best remembered of which is probably his contribution on "Caries."

ROYAL COLLEGE OF SURGEONS IN IRELAND.**PASS LIST.**

THE following gentlemen have been admitted licentiates in dental surgery of the College, viz. :—F. E. Garner, Bradford, Yorkshire ; T. M. Howkins, Guernsey ; E. Mawer, High Wycombe, Buckinghamshire ; W. D. Quinn, Dublin ; F. Sheppard, Hastings ; and C. H. J. Williams, Croydon.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.**PAST LIST.**

DURING the July sittings of the examiners, the following gentlemen passed the first professional examination for the licence in dental surgery :—John M'Laren Mason, Edinburgh ; and Arthur Sherwood Anderson, Edinburgh ; and the following gentlemen passed the final examination, and were admitted L.D.S. Edinburgh :—Charles William Stuart Wilde, Liverpool ; Thomas Gregory, Edinburgh ; William Graham Campbell, Dundee ; Charles Henry James Acret, Canada ; John Henry Cormack, Edinburgh ; James Seymour Allen, Ripley ; Walter Graham Routledge, Exeter ; Alfred Elliott Smith, Norwich ; Lawson Storrow Shennan, Houghton-le-Spring ; and Frederick Leonard Floyd Masters, Huddersfield.

APPOINTMENTS.

UNDERWOOD, A. S., M.R.C.S., L.D.S., to be Professor of Dental Surgery and Dental Surgeon to King's College Hospital *vice* Ashley Gibbings, M.R.C.S., L.D.S., resigned.

WARDELL, G. J., L.D.S.I., to be Surgeon Dentist to the Luton Friendly Society's Medical Institute.

FIELD, EDGAR A. H., L.D.S.Eng., to be House Surgeon to the National Dental Hospital.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor, 2, James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers, 6 to 10, Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and *Answers* are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

A RARE COMPLICATION OF TOOTH EXTRACTION.—With reference to a letter signed *Friedà* in your last issue commenting on my note under the above heading, kindly permit me the following reply:—

Firstly, it goes, of course, without saying, that an attack on the medical profession generally with regard to its treatment of dental cases was not intended. The reference was distinctly to “the medical man who advises his patients to poultice alveolar abscesses on the outside.” Now, although it may not be known to *Friedà*, yet it is a fact that many persons have attended the dental hospital suffering from alveolar abscesses which, by the advice of “the doctor,” they have endeavoured to “bring to a head” externally. It is true that in a few instances “the doctor” was the nearest chemist, but more often he was undoubtedly a medical practitioner.

Then *Friedà* would like to know whether, under the circumstances, a surgical atrocity could possibly have been committed. This may be answered by stating another case.

A patient suffering from a chronic discharge from a fistulous opening, due to the presence of a diseased root, sought the aid of a surgeon. His diagnosis was that the discharge was caused by necrosed bone, and he advised cutting down upon the jaw with a view to its removal. Fortunately for the patient the matter was referred to a “gentleman from the dental,” who extracted the root, and so saved the patient from a dangerous and unnecessary operation. If a surgical atrocity, such as was contemplated in this case (one so easy of diagnosis!) was possible, I leave it to *Friedà* to determine what might have happened where the position of the root was so unusual, and the possibilities consequently so much increased.

Friedà's concluding sentence conveys so little meaning, and that so utterly at variance with the tenor of his preceding remarks, that I presume there is some error in it for which the type-setter is responsible. I therefore pass it over without comment.

I am sorry that *Friedà* should have made it necessary for me to disturb him in his blissful ignorance of the fact that there are a few general practitioners who would benefit by a little instruction in the treatment of alveolar abscess—instruction that “any gentlemen from the dental” would be fully competent to

give—and I should regret it the more if, by so doing, his opinion of the general body of practitioners is in any degree lowered; because, as a class, they are worthy of the highest esteem.—T. E. CONSTANT.

QUERIES.

TREATMENT OF PULP CANALS.—In the treatment of pulp canals half the battle consists in being able to introduce a sufficient quantity of the selected antiseptic right up to and in many cases beyond the apical foramen. This is easy of accomplishment in large canals and it is not very difficult to enlarge those of medium size, but how is this to be accomplished when the canal is so small that it is with difficulty that a fine Donaldson probe can be made to penetrate it, and particularly if the root is curved? I read of dentists who claim to be able to ream out all canals, but I have never been able to satisfactorily accomplish it even in practising on extracted teeth. Failures are I think often claimed as successes. I have a case in my mind in which two pivot teeth were fixed on upper lateral roots by an advocate of the reaming process in every case. Some time afterwards these teeth became loose. It was found on probing that the sides of both roots had been penetrated and they were extracted. How much more likely is an accident to occur in more unfavourable cases. If anyone will tell me how to enlarge fine upper bicuspid canals for instance, right up to the apex, I shall be extremely grateful. I have tried the new Gates-Gilden drills which have taken the place of the Morey drills in the S. S. White's list and which appear to be similar to these latter which are so generally used for the purpose.—W. G.

ROOT FILLING.—Given a case of pulp-chamber and root canals filled with putrescent *débris* but with no pus discharge. What is the best procedure: cleansing, disinfecting, and immediate root filling, or a preparatory treatment of several disinfectant washings or dressings? The dentine is probably saturated with an irritatory gas which in my experience is not to be got rid of by one thorough treatment. If the root and tooth are at once filled what becomes of the gas? Is it too much to assume that it will find its way through the cementum and set up a slow but sure irritation of the periosteum that may eventually cause the loss of the tooth? As a proof that one treatment will not in many cases get rid of the gas try the following experiment:—Carefully remove all *débris*, forcing none through the foramen, then syringe the canals with either perchloride of mercury or peroxide of hydrogen, or both, and at once. Seal up the cavity of decay with gutta-percha leaving the roots unfilled. In a day or two the patient will return in great pain caused by the elimination of gas and its passing through the apical foramen. If instead of gutta-percha the cavity is loosely filled with cotton wool no pain will ensue. If the syringing and cotton wool filling are repeated three or four times at intervals the tooth may then be sealed up with gutta-percha with perfect safety and the roots and tooth subsequently permanently filled. Of course, immediate root filling will often prevent pain by so sealing up the foramen that no gas can find its way through and the apex might be at once sealed with gold foil and the rest of the canal left open for further disinfection. This latter pro-

cedure is extremely difficult, and as it effects no saving of time (which is one of the great advantages claimed for the immediate method), is probably no practical advantage. Opinions on the above reasons for preferring the dressing to the immediate method are requested.—W. G.

ENAMEL BODY.—I want to know a process by which I can enamel with a blow-pipe a pivot tooth to the pivot pin—the latter and the backing being platinum—will anyone help me?—CASTOR.

ANNEALING GOLD.—I should be glad if any of your subscribers could tell me the best way of annealing gold for swaging plates, 18 carat. I am confused by hearing first that the plate must be allowed to cool *slowly*, and then from someone else that it must be plunged into cold water.—IGNORANS.

ANSWERS.

BORACIC ACID.—W. G. enquires how boracic acid would “answer as a mouth wash for daily use.” It answers capitally; a great number of my patients have been using it with advantage, especially in cases of congested mucous membrane. The difficulty lies in getting a sufficient quantity into solution, the saturating point being 15 grs. to the ounce of water. This is overcome to a great extent by using Barff’s Patent Boro-Glyceride combined with an astringent.—OLD FILE.

We much regret the delay in the issue of this Number, but it is entirely due to our anxiety to supply our readers with a comprehensive account of the Brighton Meeting.

It would save much delay if ALL COMMUNICATIONS for the pages of the “RECORD” (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

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No. 10.

Original Communications.

SOME OBSERVATIONS ON SUPERNUMERARY TEETH.

By J. BLAND SUTTON, F.R.C.S.

Erasmus Wilson Lecturer on Pathology Royal College of Surgeons of England.

IN mammals the number of teeth is so constant in a given species that we are able to frame what are called dental formulæ. Frequently, however, we met with deviations from a given formula ; sometimes there is an excess, sometimes a diminution in the number of teeth.

Where there is an excess we apply the adjective supernumerary to the extra tooth or teeth. In some cases the extra tooth so closely resembles in shape the adjacent teeth that it is difficult and occasionally impossible to determine which is the supernumerary tooth. As a general rule, it is so mis-shapen that the identification presents no difficulty. It must be evident to any one, who has bestowed the least thought on the matter, that supernumerary teeth cannot be explained by any single theory. Excess in the number of teeth may arise from at least three causes:—From *atavism* ; as *sports* ; or from *dichotomy*. On the present occasion I can only deal with the last cause—dichotomy.

Throughout the animal and vegetable world there is a tendency for the free extremities of parts to bifurcate, and many peculiar conditions, normal and abnormal, in plants and animals are due to this tendency.

The bifurcation may be partial or complete, equal or unequal, and may produce supernumerary fingers and toes, or if extensive, an extra limb. When it affects the axis of the trunk it will produce a double monster and when complete, the result is twins. In order to come closer to teeth we may first study feathers, which like teeth are modified cutaneous papillæ.

As a rule, cutaneous papillæ end in simple extremities ; occasionally the apex is double, and sometimes presents three or four pinnacles. In many birds the contour feathers are furnished with what is termed an *aftershaft* or *hyporachis*. Usually the aftershaft is smaller, much smaller than the feather to which it is attached. This relation is represented in the sketch of a contour feather taken from the Himalayan Manoul, *Lophophorus impeyanus* (Fig. 1 A).

In a few birds the feather and aftershaft are equal in size, as in B, Fig. 1, taken from the Emu, *Dromæus novæ-hollandiæ*. This condition of feathers may be explained by supposing the papillæ



FIG. 1 A

Feather and aftershaft from the
Himalayan Manoul, *Lophophorus*
impeyanus.

FIG. 1 B.

Feather and aftershaft from
Emu, *Dromæus novæ-hollandiæ*.
 $\frac{2}{3}$ the size of nature.

from which these feathers spring to be divided or dichotomised. When the feather germ is equally divided, and each half grows at the same rate, the aftershaft and feather equal each other. When the dichotomy is unequal, or one half grows at a greater rate than the other, the aftershaft will appear as an appendage to the vexillum. Thus the feathers of the Emu exemplify equal dichotomy, those of the Manoul unequal dichotomy. This condition is not confined to feathers, I know a man whose hairs are furnished with appendages resembling aftershafts.

Some supernumerary teeth are explicable on the theory that a dental germ or papillæ may occasionally bifurcate, but it does not necessarily follow that two distinct teeth arise in consequence of the dichotomy, for during development the two teeth may fuse and

produce the condition known as gemination. In such a specimen as Fig. 2 the dichotomy of the papillæ was equal, but in the case represented in Fig. 3 the dichotomy was unequal, and in both specimens probably only partial. When dichotomy is equal and complete the two teeth would be as like each other as twins, and difficulty arises as to which shall be regarded as supernumerary.



FIG. 2.

Geminated tooth (after Tomes), probably the result of dichotomy of the papillæ.



FIG. 3.

A lower molar with a small tooth projecting from its side (after Tomes).

Complete and unequal dichotomy would produce the small misshapen denticles with which dentists are so familiar.

Thus far we have been dealing with simple teeth ; it seems to me that the difference between an incisor and a molar may be explained on the ground that simple teeth are developed from papillæ with a single apex, whereas molars are formed from papillæ possessing several peaks or pinnacles. I have already mentioned that cutaneous papillæ are as a rule simple, but occasionally they bifurcate, and even present many offshoots. This may even occur with simple



FIG. 4.

A multicuspidate supernumerary incisor tooth ; odontome. (*Slightly enlarged.*) dental papillæ, at least, it is the only way I can explain the extraordinary tooth now to be described. This tooth, Fig. 4, was removed by Mr. S. Brock from a lad aged 19 years ; it was situated in front of the right upper bicuspid, displacing the lateral incisor and canine, so as to occupy their position in the dental arch. As this tooth and the irregular incisor and canine gave the boy a disagreeable appearance, the supernumerary tooth was removed. As will be seen in the sketch, it has no fang, and appears to consist merely of a crown and neck, but the crown bristles with cusps, as many as nine distinct enamel covered eminences can be detected ; the appearance of the

specimen is as though a group of supernumerary teeth had become confluent. Had such a tooth been dislodged from a swelling below the gum, it would have been described as an odontome, and I see no reason against regarding it as an odontome which has cut the gum and taken rank with the normal teeth, for I have on several occasions pointed out that odontomes resemble teeth in this way—for a time during their development they remain hidden below the mucous membrane, and give no evidence (or very little) of their existence. To this succeeds an eruptive stage, and the suppuration, with the constitutional disturbance dependent thereon, draw attention to them. If this view be correct, then this remarkable structure must be regarded as an odontome which has cut the gum and taken a position in the dental series. This specimen is further interesting in that it consists of a conglomeration of denticles, for I have urged that those remarkable cases in which denticles have from time to time been erupted from a tumour connected with the jaw should be classed as odontomes. It is easy to imagine that if the cusps of this odontome remained distinct and each had been separately erupted, they would have been called supernumerary teeth. Indeed, many of the cusps can be easily detached from the main mass. Thus this strange specimen serves to bridge the gap between what I call compound fillicular cysts and composite odontomes.

SOME NOTES ON THE EARLY ART OF EXTRACTING TEETH.

By FREDERICK SLEEP, L.D.S.Glas. & Dub.

THE awe which an imperfect knowledge of the human frame and its workings must have created in early times reduced the practice of surgery rather to the treatment of dislocations, the repair of the osseous system after fractures, to the healing of lacerations of the more vascular structures, and to the common practice of midwifery. Other less frequent, but more dangerous accidents, were no doubt treated on the axiom that "no surgery is better than meddling surgery," and the patient being abandoned to the dispenser of mystery—faith—hope—expectancy and the *vis medicatrix*, did not a little to raise medicine to a creditable position. One law, coming through the Mosaic law-giver 1,400 years before Christ, was that "If a man smite on his man servant's tooth or his maid servant's tooth, he shall let him go free for his tooth's sake." Possibly "The learning of the Egyptians," which formed the greater part of Moses' know-

ledge, contributed much to the value set upon the dental organs, for from what we afterwards find mentioned by Herodotus (although nearly 1,000 years after), there is a great possibility that the teeth received more than a passing notice from the physicians even of the time of the Jewish law-giver. The Jewish law of "tooth for tooth" pre-supposes too some method of extraction, probably gathered from former masters. "Oh, virgin daughter of Egypt," says Jeremiah, "in vain shall you use many medicines." Moreover, from the fact that Cyrus and Darius sent to Egypt for physicians, we may naturally conclude that it was the cradle of the arts and sciences. Referring again to Herodotus, we find that medicine in Egypt was practised on a plan of separation, each physician treating a single disorder and no more, consequently the country swarmed with practitioners, some undertaking diseases of the eye, some of the head, others of the intestines, others of the teeth, and others diseases which were not local. They had laws to protect the nation against quackery, and *post-mortem* examinations were allowed to discover the cause of disease.

It has been declared that the different castes divided the body into divisions according to their different dignities. There is no proof of this however, as all the doctors were of the class Pastiphori.

The division of the practice of medicine too cannot be considered proof that the science had developed to such a very exalted position as to necessitate specialism, for the human body was said to be in possession of thirty-six demons, consequently it was necessary to invoke particular spirits according to the part affected. Nevertheless, that the division was capable of causing more attention to parts is a natural consequence, and that as a consequence dentistry began to be recognised as a science, there is little doubt. An inspection of ancient skulls of the Egyptians in Professor Flowers' collection at the Hunterian Museum certifies that decay was well known, and the collection of Joseph Mayer, F.R.S., of Liverpool, is said to possess specimens of artificial teeth carved in wood and ivory. On the authority, too, of a writer in the *British Medical Journal*, the Etruscan Museum of Corneto and the Etruscan Museum of the Vatican possess specimens both of artificial teeth and gold stoppings. Dr. Lauderer, of Athens (*Chemist and Druggist*), affirms that he has analysed stopping taken from ancient Hellenic skulls, which proved to be made of volcanic ash, santorian earth and lime, and that another skull had a tooth filled with gold thread or leaf, those

same skulls being collected by a friend of the writer's. Ancient history incontestably proves that artificial teeth were known and used in that country. Dr. Purland, also, some years ago declared he possessed a pivoted tooth from a mummy. Whilst, what is more to the point, Mr. Mummery avers that examination of early Egyptian skulls sufficiently testify to the fact that teeth were extracted.

He bases his verdict on the fact that the alveolar borders are sometimes rounded and not sharp as they would be had the roots been absorbed or gradually exfoliated. We must of course presume the rounded alveoli to indicate extraction of no very distant date prior to decease, else as far as my observations go, the alveoli would not differ in appearance.

As to the mode of operating or the instruments used, we are quite ignorant, there being nothing bearing resemblance to a surgical instrument in any museum I am acquainted with. Probably, the library begun by Ptolemy and finished by Cleopatra, would have contained likenesses and descriptions among the 700,000 volumes, but we are compelled to look to other quarters and depend a great deal on inference and deduction. One art depends on so many collateral ones for its progress, that we can but make a rough guess of the unknown from what we see of the known—the tools used in other departments of industry. That they were bronze is certain. Iron was said to have been discovered about Moses' time by the burning of Mount Ida, but the conquerors of Alexandria, 1300 years after, used generally (ferrum) bronze weapons, and there is no evidence that I can find that it was in anything like ordinary use among the Egyptians. That their instruments were rude is probable, but not a certainty, for many of the articles from Thebes demonstrate considerable artistic merit and mechanical skill.

The rise and progress of surgery among the Greeks was considerably hampered by the Athenian law that all who died orphans were commanded to be burned on the same day under a fine of 1000 drachma; and moreover, by a superstitious reverence attached to the Greeks and Jews as nations, that it was profanation to touch the dead. Anatomy was therefore dependent on lower animals for exemplification, and consequently doubt and uncertainty was the result. Homer, however, mentions incisions and lenitives as the manner physicians cured wounds, and considering that he probably lived 900 years before Christ, we may consider medicine and surgery had taken root among the Greeks. The second son of Esculapius is

credited as being the first Phlebotomist, having practised on his future wife, who fell from a housetop, and thereby became both son-in law to the King of Caria and possessor of a large dowry. Surely surgery was never better rewarded. The third Esculapius is, however, more entitled to the attention of the dentist, for the Greeks attributed to him the art of extracting teeth, and honoured him accordingly. The history of every science and art is a history of progress; not alone was necessity the only stimulus, for honour of the most exalted character was showered on those who were the authors of such inventions as contributed to the welfare of humanity. "Divine honours," remarks Bacon, "were rightly by antiquity attributed to *inventors*, but upon such as deserved well of their country only heroical honours were conferred." That medicine fell into worthy hands may be gathered from the following—"Artaxerxes (B.C. 425) sendeth to Histanes, the governor of Hellespont, this message: 'The fame and renown of the noble Hippocrates, of the race and lineage of Esculapius—bestow thou on him as much gold as he shall demand of thee, and whatsoever he shall have need of bestow it upon him in the most plentiful manner, and have a care to send him to me, for he shall be equal in honour and dignity to the greatest prince of Persia.'" History, however, records that the noble Father of Physic and Homer of his profession, returned answer even when threatened with removal by force, that he served his country in preference to the foreigner. His words bear testimony of the greatest candour and honesty. He remarks that out of forty-two entrusted to his care only seventeen recovered. He expressed it as his opinion that the departments of surgery requiring special expertness should be entrusted to those who gave special attention to the particular branch. Physic is said to have gained by him more than it did by all who preceded and any one who came after him. His dental advice was that the teeth which are decayed and loosened be extracted, but that when neither decayed nor loosened, they be left behind and be cauterized, even although they cause violent pain. Aristotle, however, who lived quite one hundred years after, is the first who mentions the instrument for extraction, which he designates a forcep. His pupil, however, Heraclides (333 B.C.), as well as Herophilus, the first physician who dissected dead bodies (570 B.C.), consequently practised before Hippocrates, both relate cases of people dying from extraction of teeth; and Eristratus (257 B.C.), the grandson of Aristotle and a violent opposer to

bleeding, cautiously in company with a great many down to very modern times, speaks of the leaden tooth extractor in the temple of Delphos.

Celsus the Roman, who practised during the Augustian era, and consequently whilst Jesus was on earth, was destined to form an epoch, and leave an impression on future surgery that should never be eradicated.

Some of the operations described by him are practical and nearly identical with those of the present day. Yet great as was his ingenuity, discrimination and judgment as a surgeon, he directs us not to be in a hurry to extract teeth, but advises that stimulants be withdrawn and only soft food be taken; and if the toothache be violent, hot poultices to the belly and hot liquids to the mouth. He does, however, advise extraction when absolutely necessary, such as for ulcers of the gums. The operation is described thus: the gum must be detached from the tooth, and the tooth repeatedly shaken till loosened, then taken out with the fingers or forceps, if not otherwise reached, taking care to fill with lint or lead to bear pressure of the blades of the instrument, which must not be pulled direct lest the thin bone (the alveoli) be broken, for the extraction of a firm tooth is, he avers, attended with the greatest danger; the jaw being sometimes dislocated, or the operation, if performed on the superior maxillary bone, may communicate a shock to the eyes or temples. Hæmorrhage he attributes to fractures of the jaw and advises resection of the fragments lest the jaw bone tumefy. Stumps he advises to be extracted with an instrument known as rizagra (root puller).

Arætoëus of Cappadoria, but who practised at Rome about 100 A.D., whose line of thought and style of writing has been so frequently recommended to the notice of the medical student, was a man bold, decisive and zealous, and evidently described what he actually saw. He is credited with the remark that "The cause of the toothache is known only unto God." That he said so may be recorded in the writings of his contemporaries, but it certainly is not contained in his works. Being a pungent sentence it has been made use of by everybody who has written on ancient dentistry. Credulous he may have been from the mental atmosphere he lived in, but I think he was too wise a physician to lazily cast into the lumber of the unknown a disease because the trouble could not be immediately traced to its course. That superstition found in him an active opponent may be

gathered from the following. He says, "I have seen people catch and drink the blood of the slain (criminal?) for certain diseases, but" remarks he, "I never yet heard of a cure, nor can we expect that the Creator would cure by such means."

Galen (131 A.D.) advised extraction, but preferred disintegrating the tooth with vinegar, &c. As he studied at Alexandria for some time we may assume he reflected the knowledge of the times. Even he, however, does not seem ever actually to have performed dissection, except on the simia and animals nearest to man; and as a proof as to how human anatomy was shut out from the world he revels in the opportunity he enjoyed of seeing and examining two skeletons at Alexandria, and advises students to go there to study the bones. He may be considered the last great Greek physician.

The splendour of Cæsar's conquests, together with the subjugation of Alexandria, transplanted medicine to Roman soil. Here the Egyptian and subtle Greek practised side by side on the foreigner—not that this was caused by a natural incapacity of the Roman, but by the national pride that caused the Patrician to shrink from practising themselves or educating their sons to a profession that was paid from the pockets of private individuals, and not from the public as a body. By-and-bye, however, the demand exceeded the supply, and slave and freedman contributed to swell the professional ranks. Among the foreigners was Aretœus, who practised there during the reign of Domitian, the last Cæsar. So also did Galen practise there in his latter days. The first surgeon, however, who practised at Rome, one Archagatus (B.C. 219) had a rough time of it; but, of course, things changed as civilization improved. He, however, assumed the title of Healer of Wounds, but found it better to decamp when the rabble changed it to *Executioner*. Things, however, changed for the better, for we find that tracheotomy and other operations were not uncommon during the reign of the Cæsars.

Aurelius, a physician of the Fourth Century, advised venesection and a cupping glass applied near an aching tooth, the bowels to be opened by a clyster, and the gums to be scarified. He extracted as a last resort, and did not consider that the operation removed the pain. Moreover, he says the eyes are almost always affected by extraction. Amid much that was trivial we find a great deal of sterling value that shows that experience and observation were not asleep. The Fifth Century, however, ushered in the destroyer in the persons of the Goths, Huns and Lombards, and medicine with all

the other arts and sciences seemed almost destined to an eclipse, and with the exception of Ætius, who had studied at Alexandria, there was no one worthy of passing mention. Ætius is said to be the discoverer of the fact that the fifth pair of nerves supplied the teeth with nervous filaments.

The commencement of the Sixth Century saw things worse than before, and with the fall of Rome and the burning of the Alexandrian library, all that was noble seemed given over to Dioend and savagery, and if we except Paulus Ægineta, who probably practised in the Seventh Century, all is blank. This celebrated man had studied at Alexandria which even then lived on the fame of its former glory. He remarks that the teeth are pained without inflammation of the gums, sometimes from pain attacking the body of the teeth and sometimes from the nerve which enters them being affected, and he advises storax with opium put into the corroded part or to let the patient inhale henbane through a funnel. The antidote of Philo, also, he esteemed a good remedy applied around the gum. This antidote, according to Hippocrates, was the liquid medicine of the skunk (animal?). Paul advised that loose teeth be fastened with aloes, galls, or alum boiled in wine. He with Ætius recommended spurge applied to the teeth for their removal without pain and operation, but Ætius speaks of red arsenic, which agent was doubtlessly able to effect the removal of the teeth and sometimes more too. (Dr. White, in an early volume of the *Cosmos*, declared he removed some teeth from a girl who would not submit to the operation of extraction, by the careful application of arsenic to the edge of the periosteum, and he states it was effected without pain or injury. The Chinese, too, have the credit of practising the same method from remote times.) Fortunately, however, for medicine and all that appertains to it, the trade between Mecca and Medina and Alexandria had introduced many ideas derived from a failing science, and luckily the works of the leading Greeks fell into the hands of the Arabians, and medicine, I feel no doubt, gained eventually by the transplantation. The first great light was destined to emanate from Rhazes, who lived about the middle of the Ninth Century. He has been called the Galen of Arabia, and he seems worthy of the appellation. He travelled far and wide in quest of knowledge, and history records the fact that he was the first who used chemicals in medicine. We are indebted to him for corrosive sublimate, mercurial ointment, various preparations of arsenic, the sulphates of copper,

with saltpetre and borax. His system of dental surgery can scarcely be considered progressive, for he directs arsenic to be used as a remedy for habitual bleeding of the gums. Aching molar teeth he says should be cured by pouring boiling oil on them, and, like Hippocrates, he extols the cautery. "When teeth are broken," says he, "cauterise them ; if loose, bind them to the stronger with a golden chain, and when extraction is made necessary, they are loosened if the carious cavity be filled with resin."

The Tenth Century produced another remarkable man in Avicenna, one whose works were destined to be text books and almost oracular for nearly 600 years. Avicenna seems to have extracted the same as the great one before him. He, too, declares that teeth may be taken out by the application of arsenic, worked up with the grease of the green frog. Moreover, he advised opening the radial veins, leeches to the gums, and cupping glasses below the chin for various diseases incidental to the oral cavity.

Avenzoar comes next ; he lived in the Twelfth Century, and was known as the Experimenter, because of his careful studies of the powers of medicine. It is said that he lived 135 years, and obtained the highest honours in his country. He recommended arsenic for odontalgia, and advises the local application of not more than two grains. He says the patient must allow the saliva to dribble from the mouth during the application, and not run backwards, lest it be swallowed and do injury. Contemporary with Avenzoar was Albucas, known as Albucasis, the Arabian, a Spanish Moor, born near Cordova. He is remarkable as being the first who left drawings describing surgical instruments. He performed bronchotomy among other operations, and insists on the surgeon possessing a knowledge of anatomy. The actual cautery found a champion in Albucas, for he fills several chapters of his work with all that concerns the mystical virtues of that potent agent. He might almost be considered a fire worshipper so rapturous does he become over its marvellous efficacy. Memory must ever record the fact that he was the first who ever used styptics for hæmorrhage, which has been more than once presented by the detractors of the memory of the illustrious Pare. It is, however, more than likely that Pare discovered the action of styptics spontaneously, for although he affected a knowledge of the ancients, it was only with difficulty and through the aid of friendly translators that he gained his knowledge of the ways and means of the ancients. The lover of the curious in

the rise and progress of dental surgery and extraction, will be interested in the plates, descriptions, &c., appearing in his works. It must, however, be noticed in looking through the body of the work, I discover that the extracting instruments were not all made specially for the teeth, No. 2 on plate III. being used alike for extracting arrows and teeth; No. 3, on the same plate, being used in operations for closing fistula, &c. There is no translation of this eminent man's work that I am acquainted with, I therefore give as good a translation as time and practical life will allow me.

I shall take the liberty (over and above that of extraction) to insert the principles and practice advocated by this eminent pioneer of dental surgery, as I think he introduced an important practical era. Nor is dental surgery proper alone indebted to him, for he extended his practical views so far as to advocate a lost art—that of the manufacture of false teeth. I feel glad, therefore, of brushing away the cobwebs from this man's portrait, and holding him forth to the light of day as a remarkable man and worthy of our high estimation.

The great waves of thought which make an epoch arise but seldom, but when they do their influence is felt “to the last syllable of recorded time.” Such men breathe over the dry bones and they live again—head and shoulders over their fellows rises their individuality. Their vision seems prophetic, and their actions savour of the miraculous to those living at the same time. Such were Hippocrates, Celsus, Avicenna, Albucas, and Hunter, whose words almost seem oracular to those who followed behind.

CONCERNING THE EXTRACTION OF TEETH (*Albucas*).

It often happens that the pain of the teeth becomes insufferable because of the nerves and membranes which preside over them. You may at times make a cure with the exercise of considerable perseverance, or it may occur slowly by the teeth being exfoliated, not necessarily through age, when the teeth grow up and become loose.

Now, although cure may be rare, yet it is bad practice to extract where there is hope of salvation. When, however, the severity of the pain is caused by corruption in a large cavity, thorough extirpation of the tooth is indicated. Be careful, however, that you make a correct diagnosis of the offending member, for frequently the pain of the inferior tooth passes over to the healthy one, and that one is

extracted, with no cessation of the misery till the real one is removed. Take heed, therefore, that this happen not with you, lest the tooth be removed by the hand of a blood letter.

When, however, you are certain which is the painful tooth, it is needful that you scarify around the neck of the tooth with your lancet, but be careful in your cutting that you wound the gums no more than is requisite. Then move the tooth with your fingers, delicately at first for a time, until you have shaken it ; then, after holding the head of the patient between your knees lest he shall move, then shalt seize hold of the tooth with the large forceps at a sound place, and then draw the tooth straight so you may not break it. If, however, it cannot be moved out, then take another instrument and insert it under the tooth carefully at different parts, and endeavour to move it up in the same careful manner as you have done before. If, however, the tooth is hollowed or rotten, then it behoves you that you pack the cavity with lint (*panno*), and strain it carefully with the point of the elevator that it may not be broken, whilst thou movest and strainest it with great endeavour with the forceps.

As before said, the scarificator should have been used well around the tooth so that it may be separated from the surrounding parts, and you should ever endeavour to pull straight and with a firm hand lest you break it, and the piece remaining, greater pain and trouble ensue than before. And beware you act not in the same manner as the ignorant bloodletters, who pull away swiftly at the teeth with the greatest impudence. Conceited men are anxious to be thought off-hand and decisive, although they have neither aptitude, scientific knowledge, nor prudence, to help them. Too often, such men overawe weak minded men, whose miseries alas ! are increased when their teeth are smashed and left in their jaws. At times, however, such fellows vary the operation by removing a piece of the jaw, and thus we see honest folk suffer at the hands of the rash and unskilful. After the extraction, the alveolus is to be washed out with wine and vinegar and salt, because a rush of blood may occur from the place, as often happens ; now rub the place with the zegum. If, however, that avail not, cauterise the place with the same instrument. The form of the light forceps with which the tooth is moved at first, should have long bills with short stout handles, so that you may not require a stronger pair when you operate on the upper teeth. And in like manner lest the points be bent, they may be shortened, and

between the jaws you may have teeth, so that you may grasp the tooth securely and with power, and sometimes too, the points are made like the bill of the bird known as the stork, and they are of a strong make.

CONCERNING THE EXTRACTION OF FRACTURED TEETH AND BROKEN PIECES OF THE JAW.

Whenever in extraction, some part of the tooth remains which is broken, then it behoves you that you apply *cotum* with butter, one or two days, until the part is (mollified?) made soft, then insinuate the *gestum* or forceps, whose extremities partake of the appearance of the beak of a stork. The extremities of them may be made so as to curve inwards like an *alieralfigum*. If, therefore, the removal of the tooth follows not, then take heed you cut away the whole of the gum overlying and surrounding the root, and that you introduce an instrument which is called the little alalum, the form of which is appended.

The short extremity may be of middling thickness, and you must take care it is not broken. If, therefore, it passes through, it is well ; but if it does not, help the operation with the other instruments of which these are forms. The form of the first has a triangular extremity, whilst the heavier form of the first triangular instrument is such as you have, figured first.

Moreover, the operation (before spoken of) may be even helped by an instrument having two branches, which is figured below. Also others of the instruments and steel tools for scaling, which are aforementioned, may be used. Again, you may operate with this instrument, which is fashioned like a large hook.

The triangular point is twisted, and stout, so that it may not be broken. It should be held properly and circumspectly in the hand ; but understand that instruments for the teeth are of many shapes, and it is impossible to enumerate and describe them like other instruments which the operation demands of him, or the accident requires or calls for. Because, with such ailments and operations, there are so many peculiarities regarding which the greater number are not touched on, nor can the memory describe all the useful instruments, because of the diverse circumstances at times presented. If, however, a piece of the jaw, or any other of the bones of the mouth is fractured or ulcerates, then operate above the offence with

such instruments or forceps as may be most meet, as I have directed before concerning root extraction, and you may find the *gestum* handy, the form of which I now give, and it should be of sufficient strength to grasp the piece of bone, and not slip nor shift whilst the bone is being forced out. After which, treat the place with medicines most suited to the case.

(*To be continued.*)

FOREIGN REVIEWS.

ON BROMIDE OF ETHYL NARCOSIS.

By Dr. GILLES.

(*Specially translated for us from the September Number of the "Deutsche-Monatsschrift."*)

I HAVE been experimenting on the smallest quantity of this agent for producing narcosis for the ordinary operation of tooth extraction. This has led to the conclusion that the quantity necessary for adults is from 4 to 6 grammes, and for children 2 to 3 grammes. In carrying out my experiments, in order to avoid the evaporation of the bromide of ethyl as much as possible, I have in each case covered the framework of the face-piece with a napkin. It is indeed wonderful how very quickly this agent occasionally takes effect. I have seen cases in which narcosis has been established after four or five inhalations, so that the extraction of one or two teeth could be performed painlessly. By using these small quantities consciousness has generally returned in about one or one-and-a-half minutes; the patients have recovered almost immediately, and the absence of vomiting has been very marked. We cannot surely wish for anything more simple, and there cannot be any danger of a fatal result with such a small dose, and such a short administration.

I therefore advise that in every case 4 or 5 grammes—equal to a moderate sized teaspoon—of the drug be exhibited, and this quantity should be carefully poured on the inhaler at a spot opposite the mouth and nose; if, after an interval of half, or three-quarters of a minute narcosis has not been established, a further quantity must be used. In order to regulate the quantity employed, the drug should be used out of a bottle graduated in grammes, and this may be replenished from the stock bottle. If a paper graduated label be used, it is as well to give it a coat of collodion, which preserves it

even after several wettings. I have never employed more than 10 to 12½ grammes for inducing anæsthesia during the last few weeks. If the narcosis is not sufficiently deep to permit of many extractions, the patient is allowed to recover consciousness, and when the bleeding has stopped and the patient has quite recovered, the bromide of ethyl is inhaled a second time. I am convinced that by allowing two or more administrations of the anæsthetic for a long operation the possibly existing danger is considerably lessened, besides which the operation is facilitated by having much of the blood cleared away, whilst there is less danger of blood or other foreign material finding its way into the larynx.

At any rate I am convinced that, if properly used, we can do with a much smaller quantity of the drug than that employed by Dr. Niemeyer. When we have to use large quantities, such as ten or fifteen grammes, the case must be exceptional, and calls for extreme caution. Indeed, I have had a case where a healthy young lady, after inhaling fifteen grammes, has felt no effects whatever; and even after inhaling a further dose of ten grammes, she conversed rationally, and only complained of headache. After that she asked me not to trouble myself any further, as a year ago another dentist had tried in vain to anæsthetise her with nitrous oxide gas. This was a case where there was no susceptibility to an anæsthetic. A similar case is reported by Scheps, in one of his essays, which are always characterized by conscientious thoroughness. He speaks of a student twenty-seven years of age—who, it may be remarked, was a heavy beer drinker—who was not susceptible to the influence of forty-five grammes of bromide of ethyl.

I consider it perfectly illogical that Dr. Niemeyer should ignore the value of the drug entirely because of evil effects after administering three times the usual quantity, and that to a lady who was in ill-health. It is generally acknowledged that each anæsthetic is dangerous in proportion to the quantity used. In using a small quantity, such as from five to ten grammes, no one has noticed any threatening symptoms, either of the heart or respiration, and with this small quantity we can render invaluable service to the suffering in dental practice. I therefore would ask Dr. Niemeyer not to condemn a drug which he has only tried in two cases.

We must not indulge in any illusions concerning bromide of ethyl, for it cannot but be injurious to the nervous system, though not to the same extent as other narcotics; and if too much enters

the system, the functions of the central nervous organ—especially if complications already exist—become more or less entirely suspended. The influence on the nervous centres may become so pronounced, that in addition to the suspension of consciousness, the motor centres of the heart and respiration, situated in the medulla oblongata, may be affected to such a degree that the circulation and respiration cease entirely. Just as in chloroform narcosis a whole series of deaths has occurred during the excitable stage, there also pertains to bromide of ethyl the danger which belongs to muscular rigidity in a greater degree than in chloroform; for by the violent contraction of the respiratory muscles—especially of the diaphragm—as well as by the contraction of the cardiac muscles and arterial coats, the respiration and circulation may cease. But all the dangers only attach to bromide of ethyl when used in large quantities; and I have sought to prove that such quantities are not necessary in dental operations.

EXTRACTS.

ON THE BAD EFFECTS OF LAUGHING GAS.

By F. NEWLAND-PEDLEY.

NITROUS oxide gas is so safe as an anæsthetic that it is given to almost any patient, and, during the last three years, while the duties of dental anæsthetist fell chiefly on me we had no fatal cases, and the only patients to whom we hesitated to give gas were those obviously far advanced in phthisis, and very stout old people. From time to time alarming symptoms arose, the breathing ceased, and artificial respiration was necessary. Occasionally we warned a patient never to take nitrous oxide again, but it was not quite clear that it was the gas that was at fault, for some out-patients brace their nerves with alcohol, and others with a full meal, just before a tooth extraction. On the whole, our experience supported the comforting dogma that anyone who is fit to undergo the extraction of a tooth is fit to take nitrous oxide gas.

The following case is an exception to such a rule:—

Mr. ———, a student in the hospital, applied on June 21st to the assistant dental surgeon of the day, to whom he was well known, wishing to have a very bad lower molar extracted. I am indebted to the patient for the following history of his case. "He took the gas at the commencement very well, but after a few respirations the

breathing became shallow. Did not turn colour much. On waiting for first stertor, patient suddenly stopped breathing and turned black in the face. Masseteric muscles became rigid. Pulse pretty good. Pupils not dilated. No attempt was made to remove the tooth at this sitting, for the patient's general condition, due to the effects of gas, was too urgent."

A week later, June 28th, patient again took gas to get rid of his aching tooth. He reports :—"Was watched carefully. First few respirations went all right, and then they got shallower and shallower. Before anæsthesia was complete he suddenly stopped breathing, and turned black in the face. Pupils not dilated ; no squint. No attempt was made to remove the tooth. Easily came round. Pulse not so good as on first occasion, being slightly intermittent. No after effects from the gas beyond slight dizziness and headache."

A week later, July 5th, the injection of cocaine was tried. "Four minims of a 15 per cent. solution of cocaine were injected into the gum on each side of the stump. After an interval of eight minutes, the whole of that side of the face and gums was quite insensible to touch and felt swollen. During the operation, which lasted about a quarter of an hour, I felt practically no pain. Towards the end of the operation, I began to feel a tingling sensation in the hands and feet, and a slight buzzing in the head. After this my hands and feet got rather numb, the right side more so than the left, and the fingers of the right hand (same side as injection) became firmly extended, the metacarpo-phalangeal joints being slightly flexed. They remained in this condition for about twenty minutes, and then after a little rubbing I had proper control over them again. The anæsthesia of the right side of the face was perfect for about half-an-hour, and then sensation began to gradually return, complete sensibility being restored about a quarter-of-an-hour after this ; but the tingling of the hands and feet did not go off for about an hour after commencement. After the operation I felt somewhat faint, and the pulse was feeble, but this soon got better, and I felt no other ill effects from the cocaine."

The attempt to elevate the tooth failed entirely. A few days later, July 9th, another attempt at extraction was made under the injection of cocaine, but the quantity injected was so small that there was little diminution of the pain felt. At this stage I was consulted. At my request Mr. Cruikshank gave ether, and I gave a

little gas to avoid the unpleasantness of the early stage of ether anæsthesia. The quantity of gas given was small, and the patient was watched with great care, but respiration stopped and the same train of bad symptoms occurred as before. Under the influence of ether, I readily extracted the tooth by splitting it vertically and removing the roots separately, and it was seen, by fitting the roots together afterwards, how little suitable such a case was for the use of the elevator.

At my behest, the patient has had his chest thoroughly examined, and no defects of the thoracic viscera are revealed. He has had a somewhat wide experience of anæsthetics, and has taken chloroform without unusual symptoms. The effects of the injection of cocaine upon him were far from uncommon, and were such as induced me some three years ago to abandon its injection in dental practice. He did not take ether well on July 9th, but this may have been due to the effects of the gas given with the ether. Nitrous oxide seems to exercise a toxic effect upon him, for on three consecutive occasions the same alarming symptoms arose with slight variations, probably attributable to the constitutional effects of protracted pain.

With great satisfaction one adds that within the last few weeks additional anæsthetists have been appointed, enabling a satisfactory arrangement to be made for the attendance of an anæsthetist in the dental department on each day of the week.—*Guy's Hospital Gazette*.

THE PREPARATION AND FILLING OF ROOTS AT ONE SITTING.*

By E. L. CLIFFORD, D.D.S., Chicago.

"'Tis more by art than force of numerous strokes
The dextrous woodman shapes the stubborn oaks."—*Homer*.

DURING the transactions of our January meeting a member of the Business Committee approached me, and asked that I furnish a paper for your consideration, and kindly accorded me the privilege of selecting my own topic. You will probably remember that at this meeting the subject of filling root canals was presented to you and very fully discussed. This, combined with the fact that I had a few days previously noticed the following article in the December "Items of Interest," prompted my deciding upon the subject of "The Preparation and Filling of Roots at One Sitting."

"The article referred to bears the caption, 'I do not indorse

* Read before the Chicago Dental Society.

immediate root filling,' and reads as follows :—'We can never know that incipient abscess is not present, and, if it is, trouble will always follow such an operation. It is to be deplored that this practice is advocated to such an extent in our periodical literature, on account of the danger of leading young men astray. We should be more conservative in our practice. A root may be filled immediately if we have destroyed and removed the pulp ourselves, but, even in those cases, I would prefer to leave it a day or two, to destroy any living tissue that might remain in the canal. For this purpose I know of nothing better than carbolic acid '95 per cent.' "

The above article bears the signature of an honoured member of our profession ; one whom you and I respect and appreciate as an authority upon dental subjects ; one whose unpretentious and unobtrusive method of imparting to his fellow practitioners whatever of interest has dawned upon his prolific mind has more than once awakened our commendation. His professional standing, I feel, warrants the liberty I have taken, and the prominence here given to his thought ; and it is to provoke a generous and a just discussion, distinguished for ample deference, that I present this subject.

The reason given for the position taken in the above paragraph, and the only reason, is, "We never know that incipient abscess is not present." Well, suppose it is present ? What is an "*incipient*" abscess ? In medical lexicology I have hunted in vain for an interpretation. The term incipient, I know, is used with freedom by medical writers, and will therefore exonerate the authority quoted from any intention to launch a new word upon our already crowded sea ; but as the term has not been thought of sufficient importance to find a place in our special lexicons, I take it for granted that it is used simply in its original and literal meaning. Therefore the term incipient abscess must mean an abscess just beginning, for the word is defined "beginning, commencing, starting " Now, what has pathology taught us is the beginning of all abscesses ? Is it not inflammation ? And must not inflammation be preceded by, first irritation, then contraction and dilatation of the vascular surroundings, followed by hyperæmia and more or less complete blood stasis, to be in turn followed by the various steps consequent upon any inflammation ; and let us not forget, at this point, that inflammation does not *necessarily* lead downward through the grade of retrograde metamorphosis to finally reach suppuration, atrophy, gangrene, or death. But remember that life is tenacious ; that

physiological tendencies, with equal fortune, will invariably overcome and overbalance pathological drift, the inclination of all tissues to return to the normal health status being so great. No. "Inflammation ceases to advance just so soon as the irritation is removed, and the blood, circulating through the vessels, restores their walls to a healthy state. When this happens, *recovery* at once begins. The injury to the vessel-walls being slight, and the exudation trifling, the vessels soon begin to perform their normal functions, and what is effused undergoes reabsorption by the lymphatics, or by the blood vessels themselves."

Now then, this fact established, should the presence of an incipient abscess debar us from finishing our operation, *if* it has been possible to thoroughly clean and sterilize every portion of the pulp canal and dentinal tubuli, and can successfully reach with our filling material the apical foramen? I think not. The position I take in regard to devitalized teeth is, that there is but *one* object to be accomplished in their preservation; that is, to *clean* the roots; and this, I believe, can in a majority of cases be done (I will not say as well, but better), at one sitting than twenty. In using the word clean, I, of course, use it in its most superlative sense, no half way, or "that is well enough," should ever satisfy the honest operator.

If then, our sole object is to clean the root, it signifies that the root contains something that is unclean and impure. The question then arises, if this unclean and impure matter is contained in the root, in what portion of the root does it find a habitat and a lodgment? Is it in the pulp canal, and the pulp canal *only*? If so, 'twould be an easy matter to purify and clean all roots presenting, at one sitting. But are we not stubbornly met with the fact that the boundary line of this unclean substance, and its effects, reaches farther than the above suggestion, and therefore that our remedies must penetrate farther to be effectual?

Another question would here naturally arise:—Can we follow it, and if so, how? Another digression forces itself upon me at this point, but only for a moment, as I will accept it without comment; that is, to accept the germ theory as an etiological factor in the pathological condition to be overcome. I take it for granted that micro-organisms are accepted as prime movers in all pyogenetic affections, at least until some other theory more plausible is advanced; and from this bulwark will fire the random shots destined

for the field of inquiry upon the ground of progressive surgery. Fermentation and putrefaction having advanced sufficiently, the habitat or lodgment of the micro-organisms has, of course, become too small; their products have generated and produced sufficient gaseous substance to more than fill the cavity of the pulp chamber and canal; consequently a hunt for other quarters is their ultimatum. The nearest and most direct outlet we believe they will take, and our minds are at once directed to the dentinal tubuli and apical foramen. The tubuli, having been occupied by animal matter, must certainly come in for their share of fermentation and putrefaction and their results, and must so harbor nests of micro-organisms that might revolt at any moment, declare an insurrection, and proceed to wage a merciless war upon the surrounding tissues. For this reason, it will readily be seen that it is not enough to clean and sterilize the root canal proper, but these tubuli must also be emptied, cleaned, dried, sterilized and filled.

As to how this shall be done: My first thought in the procedure of such an operation is, *thorough dryness and complete* protection from any future inundation of saliva, water, or other septic fluid. To gain this, the rubber dam is brought into play, safely adjusted, and the cavity of decay and pulp chamber relieved of its detritus. Having removed all possible with spoon excavators, and dried as much as possible with bits of spunk, I then saturate the chamber with a *non-escharotic* disinfectant, waiting a few moments, again dry the cavity, and proceed to remove any particles of putrescent pulp within the canal. Should pus already have formed, I use alternately injections of peroxide of hydrogen and an etherial solution of iodoform, believing that, with these agents, I simplify and render easy what would otherwise be tedious and difficult. I do not know that I have seen a reason given for this alternating of H_2O_2 with iodoform and ether, but, believing that, to be scientific, we should have an end to accomplish in each step taken to re-establish a physiological function, or to eradicate a pathological condition, I will try to give you my reasons for each step taken.

First, then, we court perfect dryness. Why? Because moisture, warmth and microbes are the three essentials to septic fermentation. Absence of any *one* of these is sufficient to prevent decomposition.

Second, protection from saliva. Why? First, because it is a liquid, and its presence would thwart our efforts at dryness; next, our scientific researches have shown us that saliva contains and

propagates, not only all classes of bacteria now known to us, but most of the fungi as well. Not only benign micro-organisms find a flourishing element in saliva, but most of the pathogenetic species also. In fact, nearly fifty separate and distinct foreign and malignant substances have been extracted from the human saliva, ranging from a simple mucous corpuscle to pus corpuscles and all the malign bacilli known to exist within the animal economy. Thinkest then you have sufficient reason to protect from saliva?

Third. Why disinfect the cavity of decay? That you may not push into your pulp chamber, and from thence into and through your root canals, the septic matter you know to exist in that habitat; also on the principle of "an ounce of prevention being worth a pound of cure."

So far we have had a comparatively easy task. We have had only that portion of our root to deal with that we could see or feel. If, however, putrescence has taken place, disintegration has, of course, been established, and it will be impossible to remove the pulp entire, and the process of removing it mechanically is too long and tedious (especially if the case in hand has more than one root). What, then, shall be done? It is my practice, after removing all possible in the manner described above, to saturate the chamber and canal with the vol. ex. eucalypti (made by Sander & Sons, of Australia; I never use any other), and then drying with spunk, to apply chloroform to saturation. My object in doing this is two fold: First, for its analgesic effect; but mostly as a solvent for the oils and fats left adherent to the walls of the canal, and occupying the spaces of the tubuli.

(Although not pertinent to the subject in hand, I will state that if I were not going to fill at one sitting, and wished to accomplish the same end by prolonged treatment to two or more sittings, I should fill the pulp chamber and canals with Squibbs' carbonate of soda, and leave it for three days. I would thereby saponify these oils, fats and extraneous matter with this alkali, and, at the end of the time named, a little warm water would be all required to wash out and clean the root.)

The fatty substance being disposed of, in what condition do we find our organ? Tolerably clean, but we have been compelled to use liquids; therefore we still possess one of the main elements necessary to the growth and propagation of pathogenetic material; *i.e.*, moisture. We insert our cotton, bibulous paper, spunk, and

all the other absorbents at our command, but still our work is defective ; it is not complete ; we have not been thorough, and there is only one element in nature known to me that can be called to our assistance. That element is heat ; and although the statement has been made that heat as an antiseptic was useless to the dentist, from the fact that some scientist had discovered that 212° F., and that maintained for $1\frac{1}{2}$ hours, was necessary to destroy microbes without spores, and that the heat must be increased to 284° F. and maintained from $1\frac{1}{2}$ to 3 hours to destroy the spores. I am satisfied in my own mind, and will endeavour to show, that we do not use heat for its direct antiseptic effect ; but it is one of our best assistants towards that end. The statement has also been made, that the perfect drying of a root by heat (such, of course, as can be used in the mouth) will not destroy germs or spores. To all this I bow in humble acquiescence. But, acknowledging the fact, is there no other assistance that heat can render us in accomplishing this end ? I think so. After drying as well as possible with our absorbents, if we can contrive some method or appliance by which we can carry heat much greater than the normal surroundings of the root into the canal, we certainly can extract from its hiding place all the moisture possible. We certainly know it is a law of physics that no two substances can occupy the same space at the same time. We also know that a superheated instrument, coming in contact with water, will convert it into steam, which is gaseous, and cannot be confined, but must escape ; vacuum must be the result. We also know that nature abhors a vacuum, and that these osseous structures, having been deprived of their natural quota of water, will seek for and find, if possible, its requisite. Taking advantage of this physical law, we supply the new moisture, first charging that moisture with some element known to be antagonistic to growth and development of pathogenetic elements. We find this dry, desiccated tooth waiting with impatience to drink or suck up the first molecule of water presenting, and in order to carry out the idea first established, and to kill as many birds with one stone as possible, the moisture I select is the etherial solution of iodoform. The liquid penetrates into all the anfractuositities and diverticula of the bone or abscess ; the ether becomes absorbed or evaporated, and the agent is deposited uniformly on the pyogenic membrane, the action of which it modifies, dissolves any oils or fats which may have been left in the tubuli, and leaves the spaces filled

with the medicament used. Now, having the root thoroughly saturated with iodine, I promote further evaporation by warmed air, and take a further advantage of our physical law of suction, and compel the dentine to attract my chloro-percha solution or oxy-chloride of zinc, which ever material I am using. Of course the less dentine we have in the roots the less disinfecting we are called upon to accomplish ; and if the strength of the organ will permit it, and your sense of touch is sufficiently skilled, I would admit the theory of Dr. Allport, and advise the removal of as much dentine as possible. I should advance, however, in the practice of this theory with a grain of caution.

We have our root now, if we have done our work thoroughly, cleaned and relieved of its pathogenic substance, and we have replaced this substance with a clean, artificial, non-porous, indestructible, impermeable, antiseptic, non-corrosive substitute. Now, if we can do what I have stated above, can we do more by prolonged endeavour? And I will only ask to be credited in the statement that daily experience is justifying the course, so far as I am able to judge ; and, without wishing to be personal, or deemed given to flattery, I cannot let the opportunity pass without acknowledging the debt of gratitude I feel to a member of this society in placing in my reach and possession an instrument to which I ascribe my entire success in the preparation of root canals at one sitting, to receive the crown fillings. I refer, as you know, to the root dryer of Dr. J. H. Woolley, without which I would not continue the one-sitting process.

And now to retrospect, to review—are there any impossibilities stated in the foregoing, are there any illogical deductions drawn? You will all recognize the fact that these several steps can be followed in less time, or as much at any rate, as the detailing of them will require, and why shall a patient be required to spend from three days to three weeks in running to our offices when the end can be accomplished in one hour of continuous work. A case in practice comes to mind—a confrere resident in one of our suburbs had for a patient a lady about thirty years of age who lived on the west side and consequently a great distance from his office. One of the lower bicuspid had abscessed and the patient had spent her time and money for several months in semi-weekly visits to her dentist with the result that each time the tooth was tightly sealed the inflammation would reappear. At last the dentist feeling, I guess,

that he had exhausted his list of remedial agents, and seeing that the patient was tiring of her continuous and repeated visits so great a distance, told her that if she had any trouble after his last treatment, to call on me and ask me to attend to the case for him, as she only lived a few blocks from my office and it would save her considerable time and expense. It was only a few days when the patient applied to me with a terrible sore tooth and considerable pain. After getting a full history of the case I removed the dressing in the root, found considerable suppuration, and after washing out as much as possible I filled the canal with carbonate of soda, and dismissed the patient for three days. (You will recognize that I was dealing with another man's patient and felt that I would take no risks so I gave two treatments). At the appointed time she returned, when the saponified residue was washed out and a line of treatment similar to what I have detailed above was pursued. The root was filled with oxychloride of zinc and hydronaphthol (at that time I had not used chlora-percha) and the crown filled with oxyphosphate, with instructions to return to her dentist at the end of two weeks and have a gold filling inserted. The dentist afterward called upon me, stated that he had filled the tooth with gold, thanked me, and asked me to tell him what I had done to that ——— tooth.

Another case—A lad about 18 years presented r. l. bicuspid terribly decayed, jaw considerably swollen, but as he lived within a few doors of my office where I could watch him I wanted him for an experimental case. He wanted the tooth extracted. It was in the forenoon and I had a patient in the chair, so I opened into the pulp chamber when his mouth filled with pus and he was to some extent relieved. I told him to call again at 2 o'clock, which he did, when I adjusted the rubber dam, cleaned and filled the roots and crown. It is now about five months and I see the patient often and he is delighted that he did not have the tooth extracted. Now the question may very properly be asked, from what I have stated, if I would advise the filling of *all* roots at one sitting. I would answer: Not till the good Lord concludes to make each and every individual exactly alike, can we presume to lay down one unalterable, infallible rule to apply to all cases. Judgment must of course be used in any and all operations of surgery, no matter how trivial they may appear. But I am willing to be placed upon record with the statement that the conditions forbidding the pro-

cedure are the exception by far and not the rule. I believe the fact is established, and one upon which there is no difference of opinion at this time, that all aseptic canals are ready to be filled. I, also, believe the fact established that all canals possessing an exit through a fistulous opening in the gum may as well be at once cleaned and filled. Thus you will see these two facts would probably embrace three-fourths of all the canals we are called upon to fill, leaving a small minority about which there would be question. In reflecting upon this minority the principal reason, usually given, that would negative our procedure would be the fact of no existing fistula, or what is generally termed a blind abscess. This fact *alone* I cannot accept as reason sufficient for protracted treatment, as experience has shown that (though possibly provoking an acute pericementitis for twelve hours or more) in a vast majority of cases the great tendency of nature to reassert herself and the physiological proclivities being so much greater and overpowering the pathological in her effort to return to health, that victory will at last be proclaimed upon the right side, and a complete subsidence of all outward manifestations will be the result. Should I fear however that the vital energies of my patient may be taxed too greatly, I always anticipate and relieve the immediate pressure by establishing what nature has thus far failed to make, an artificial fistula, and prescribing a few doses of some of our newer anti-neuralgics and analgesics.

From the above, what would we conclude to be the essentials to success in root filling? First, perfect dryness; second, no vacuum; and third, as precautionary and preventive, drainage, as in all surgical cases in other portions of the organism. I can say, with the editor of the *Western Dental Journal*, that immediate root filling should not be practised unless dryness, which is the first step toward an aseptic condition, can be secured; and this condition I believe can as well be secured in blind abscess as in those with a fistulous opening (hæmorrhage excepted). So much so am I convinced of this fact, that I have reduced the conditions to two that would prevent and forbid an attempt to immediately fill a root presenting for treatment. One of those conditions, and the main one, is the impossibility to dry the whole of the dentine. This will be the case at times in persons of a hæmorrhægic diathesis. The other where the tissues are so swollen and painful as to render it cruel to operate at that time. The treatment I can but regard as philo-

sophical and logical. It is but a sequence of a proved knowledge so beautifully illustrated to our society by Dr. Andrews, of Cambridge, at our recent clinic, that the disease is the result of sepsis, and when the septic condition has been removed, and its place taken by an impermeable and indestructible filling, a certain cure must result, just as certainly as if the canal had been obliterated by the extraction of the tooth. Any remaining products of the once existing irritant will speedily be absorbed and changed into healthy cicatricial tissue. One condition may exist that would retard and probably prevent a subsidence of all irritation, and that would be the presence of necrotic tissues either in the root or maxilla. In the successful treatment of this condition, however, the passage through the root is not essential, and would not debar me from filling the root, as I would continue the necessary treatment through the gum, and expect, in time, a recovery.

The question also arises, if it is deemed hazardous to immediately fill these canals, why is it? What would result? What could result? Well, although the past life of this subject is short, there is hardly any pathological condition that has followed an operation that has not been attributed (not to the filling of the root, not to the existence of an almost foreign substance imbedded in the tissues, not simply to dental irritation, but) to *immediate* root filling. A case is reported in the February number of the *Archives*, in which considerable mischief is said to have resulted from *immediate* root filling. The reporter of that article starts out by saying that the patient was served by a *fine* operator, and winds up the facts of his statement with the remark that "the other tooth was *reamed out* and filled." Well, if this reporter has told the whole truth, and nothing but the truth, about the operation, I do not see how any but unfavourable results could be expected. *Reaming* out and *digging* out are certainly not very euphonious terms to the professional ear, and certainly cannot be said to constitute the necessary steps to any surgical procedure; so that, if the statement can be borne out by the facts, the results were certainly not from *immediate* but from *imperfect* root filling, which may have occurred in any case treated for months.

As stated before, almost all varieties of reflex and disseminate neuroses have been attributed to this operation. You all remember a case presented to this society only a few meetings ago, and reported as a result of immediate root filling—a case of alopecia

areata. Now, although in the highest degree probable that alterations, and particularly shedding of the hair may at times be dependent upon nervous influence, yet exact proof of this fact is still wanting. The affection, according to late investigators, is considered as a tropho-neurosis. Experiments have been made, and clinical observations recorded with reference to the influence of disturbances of nutrition, and also of psychoses, upon the condition of the hair; but the data so far obtained are extremely deficient. Joseph has asserted that such a thing as a distinct bundle of trophic nerves does exist, and also that he can produce a circumscribed alopecia in cats by the extirpation of the spinal ganglea of the second pair of nerves of the neck, together with portions of the neighbouring posterior and anterior roots. While these observations thus far made, taken singly, would not be convincing, yet, viewed collectively and in connection with the physiological experiments, we seem to have strong evidence of the tropho-neurotic nature of circumscribed alopecia. Hence it would appear that any irritation reflected to the trophic centres might result in this condition, especially so when we notice that headache is one of the commonest premonitions of alopecia. Cases have also been reported in which heredity was an etiological factor in alopecia areata; and when the neuropathic predisposition is present, very slight influences are enough to cause the appearance of some nervous disease. The most prominent causes, however, are the traumatic and the psychical, and it is not astonishing to find the disease following either of these causes, when we reflect that it is only the merging of a hereditary proclivity. The question of age has also entered into the inquiries upon this subject, and $12\frac{1}{2}$ years was found to be the average at which the disease appeared; so it has been suggested that it is in some way connected with the second dentition and puberty; but the fact is not established, and at present we are only certain of one condition dependent upon the trophic nerves, and that is the suspension of their activity, giving rise to subsequent atrophy.

The foregoing may indeed seem a digression to you, but it has proved interesting to me to collect these facts, in order that we might more thoroughly understand the etiology of a pathological condition reported to us as a result of immediate root filling.

I am satisfied the reporter of the case did not intend to convey the impression even that the disturbance was caused by the abstract

fact of *immediate* root filling, but that it was the effect of an illjudged dental operation, resulting in a dental irritation, reflected through the sympathetic ganglia to the trophic centres, and arousing, in the case presented, a predisposed hereditary proclivity. I have too exalted an opinion of the diagnostic powers of my friend, not to take this view, especially as I could report another case similar, of a young girl who glories in the possession of two bald spots, about the size of a silver dollar, upon the right parietal region, which ceased to enlarge, and again began to be supplied with a new growth of hair after the extraction of an upper molar tooth (which had never been filled) and a few visits to the Sutherland sisters.—*Dental Review*.

THE MEDICAL STUDENT OF THE FUTURE.

For one reason or another, the inaugural address at the re-opening of the medical schools is falling a little into disfavour. Possibly this may in part be due to the general dislike of enthusiasm which is almost cultivated as a fine art amongst educated people. It is truer now than in Byron's time that

Enthusiasm in good society
Were nothing but a moral inebriety ;

and it **must** be confessed that many speakers at the 1st of October assemblies have been at times a little too poetical and romantic in their way of describing the honours and privileges of "our noble profession." As these addresses are for the most part delivered by the great and successful men of the profession, who have every reason to be grateful for the way in which the Goddess of Medicine has treated them, it was felt at times that the highly-coloured pictures they drew were rather the representations of their own particular successes than of those which are at all likely to await the ordinary medical student. We could almost detect the lecturer with his tongue in his cheek as he described the dignity, the public gratitude, and the certain competence which were sure to follow the patient student who did his hospital work creditably and refrained from music halls and late hours. His audience always had sense enough to understand that it is by no means the best and most patient work which reaps the highest reward in medicine any more than in other professions ; and that often the most conscientious and high-minded medical man will be left behind in the struggle where the smart pushing man takes the prize. Nothing is easier than to

be cynical and severe on such a theme, though, as usual, the cynical and easy course is the unfair and false. Sneer as we may, be as worldly and unpoetical as we please, the profession of medicine *is* a noble one, and can but fill with enthusiasm the mind of any competent and thinking man who speaks or writes about it. The reasons which urge us to any course of action are usually complex, and those which impel a man to the choice of a profession are largely so. We may assume without the least offence that most men enter on the study of medicine as the means of obtaining an honourable living ; it is not necessary to pretend to any higher motives like that which should influence a student of divinity. Yet there is room, we maintain, for the influence of the very highest motives in the choice of the healing art as one's calling in life ; and the influence is likely to have an actually greater scope, and the end is often even more likely to be achieved when it is concealed by the friendly covering of the less exalted motive.

There are hundreds of medical men in our land to-day who lead lives of the loftiest enthusiasm, working for the good of their fellow-men, and blessing all within the scope of their influence, pretending, with a beautiful humility, that they are only following their common business, while they are actually ministering angels. A doctor may live and work for fees, and be respected just as any other servant of the commonwealth ; he may also live and work for humanity and the love of his neighbour as though he were ordained for the proper work of the ministry. Grand and beautiful as was the work of Father Damien amongst the lepers of Molokai, there is no reason whatever why a medical man should not have done as much or even more. "Nothing great," says Emerson, "was ever achieved without enthusiasm," and we know it to be so, whatever the hard cold world may say, which, in truth, does not greatly care for anything which it cannot quite understand.

What is wanted is a noble ideal : given this, it may be exercised as freely in our profession as anywhere in this world of ours. What a man seeks at his medical school this October that shall he find Honours, they await him ; emoluments, they shall come ; happiness the great enduring pleasure that comes from a sense of duty bravely done, this too shall be his, at the price—at a fixed price and no abatement ; to this let him make up his mind as quickly as may be. Let him examine himself, and know what it is he wants ; he can certainly obtain it. Let the lower motive content him, he will not

be disappointed. Medicine is rich enough to pay him for his pains ; he shall have his house, his servants, and his gig ; shall be justice of the peace, mayor of his town and be held in honour of men. A man, by indomitable energy and perseverance, may get all he wants. As Hazlitt somewhere says, he could always gain admittance to see any famous picture in any great man's home, notwithstanding the darkest frowns of the servants ; and he adds that he could, by similar means, have obtained any post under Government which he might have set his whole mind upon.

The thing, therefore, to be sure of at the outset in devoting one's self to medicine is the end proposed ; if self, then not happiness of the highest sort also ; if peace of mind and the purest sort of happiness be the end in view, then to live and work for others, for the advancement of the profession in its widest and grandest aspects, is the only certain way to obtain them. Old Thomas Vicary, chief surgeon to St. Bartholomew's Hospital, 1548-62, says in his curious *Anatomie of the Bodie of Man*, that the doctor must be learned, must know his principles, be seen in natural philosophy, in grammar, must speak congruity in logic, speak seemly and eloquently, know things natural and non-natural, and, above all, be good-looking, for whose face is not seemly, it is impossible for him to have good manners.

All this implies much more than is demanded for the mere cramming up for professional examinations. Be liberal in your treatment of the most liberal of all professions, and give at least as much as you take. How few men ever think of paying the least fraction of their indebtedness to science ! They consider this is all arranged for in their hospital ticket. Such men

Know, not for knowing's sake ;
Know, for the gain it gets, the praise it brings,
The wonder it inspires, the love it breeds.

No man striving only for his own happiness can ever attain it, because he is in the midst of forces contending against him set in motion by every other man of the same determination. Count Tolstoi has admirably explained why this struggle for individual happiness must necessarily fail of its purpose ; and Mr. Browning, in his magnificent poem of *Paracelsus*—which should be known by heart by every medical student of the thoughtful sort—has pointed out how mere knowledge for a selfish end can never bring happiness, whatever else it may achieve ; but that love, allied to knowledge,

can transform the soul to God-like beauty. We may long, like Paracelsus in the poem,

To wring from Heaven some wondrous good for man :

but it may not be given to many of us to do great things. Of every medical man, however, Society—having in view his great endowments, his privileges, his public estimation, and the dignity of his calling—has the right to expect maintenance of the fabric, if not its adornment ; and, as he is necessarily looked up to as a “doctor,” that he shall be a real teacher how to live the highest mental as well as the healthiest bodily life. As Sir J. Crichton Browne pointed out recently, this can best be done by imbuing our own minds with the prolific and ennobling thoughts of the wisest writers of the past and present : for to teach we must learn. Some will say we ask too much of the overtaxed medical student. Not so. The mental enlargement we demand can be had as relaxation between the intervals of necessary studies. One hour a day with the great poets and prose writers will enable the student to do better work in the medical school ; he will not lose his time by this form of dissipation ; and when he goes into the great world which lies outside his hospital, he may find his own medicine and that of his patients in the balm for troubled spirits which the philosophers and poets of all time stand by to minister. We say he will not lose his time by this expansion of his education ; it will serve to digest his technical knowledge, to combine and blend his studies into a truer and sounder learning than can be tested by examination papers or rewarded by degrees.

Let no student, therefore, think that so much anatomy, physiology, medicine, and surgery, signed up and certified for at school, and college, suffices to make the medical man of to-day. In one of the most suggestive of the inaugural addresses delivered in London last October, that by Dr. William Ewart at St. George's Hospital this point was strongly emphasised. We cannot refrain from recalling a sentence or two. “Among the youths,” says Dr. Ewart, “who elect to follow this calling, many do so in ignorance of what the choice implies. Of no other profession is it more true that an easy entrance examination is unkind. Ours, nowadays more than ever, is an exacting profession. Although neither genius, nor brilliancy, nor even talent are wanted, she claims energy, physical and mental, capacity for sustained efforts, earnestness, and a high moral tone.

A medical practitioner whose whole life is not that of a persevering student has no business in the profession. A man who knows nothing but what his curriculum enforces, and who makes haste to forget that as soon as it has obtained him his licence to practice, can only bring discredit on the high-minded and cultivated men who spent their lives in making smooth the path he has unworthily trodden. If medicine is to hold its high position, and retain the respect in which it is justly held, the men who are coming forward for its emoluments and distinctions must be equipped with all the richer learning which is required to enable them to hold their own in a world which is daily becoming more highly cultured, and which will certainly demand more of its medical advisers. A mental outlook bounded by six-ounce bottles and an intellect from which there is gradually fading the scanty lore gathered at the medical school with much pain and but partial comprehension far too generally characterise the middle-aged general practitioner of to-day. He of to-morrow will need to know more, and to know it in quite another way.—*British Medical Journal*.

THE BAND WAGON IN DENTISTRY—FRANCE ITS HOME.

As she passed across the market-place she saw a crowd surrounding a vehicle of a strange shape, on the box of which a man dressed in red was haranguing. He was a dentist going his rounds, who offered the public complete sets of teeth, opiates, powders and elixirs. Fantine joined the crowd and began laughing like the rest at this harangue, in which there was slang for the mob, and scientific jargon for respectable persons. The extractor of teeth saw the pretty girl laughing, and suddenly exclaimed,—

"You have fine teeth, my laughing beauty. If you like to sell me your two top front teeth, I will give you a Napoleon apiece for them."

"What a horrible idea!" Fantine exclaimed.

"Two Napoleons!" an old toothless woman by her side grumbled, "there's a lucky girl."

Fantine ran away and stopped her ears not to hear the hoarse voice of the man, who shouted—"Think it over, my dear: two Napoleons may be useful. If your heart says Yes, come to-night to the *Tillac d'Argent*, where you will find me."

Fantine, when she reached home, was furious, and told her good neighbour Marguerite what had happened. "Can you understand it? is he not an abominable man? How can people like that be allowed to go about the country? Pull out my two front teeth! why, I should look horrible; hair grows again, but teeth! oh, the monster! I would sooner throw myself head first out of a fifth-floor window on to the pavement."

"And what did he offer you?" Marguerite asked.

"Two Napoleons."

"That makes forty francs."

"Yes," said Fantine, "that makes forty francs."

She became thoughtful and sat down to her work. At the end of a quarter of an hour she left the room, and read Thenardier's letter again on the staircase. When she returned, she said to Marguerite:

"Do you know what a miliary fever is?"

"Yes," said the old woman, "it is an illness."

"Does it require much medicine?"

"Oh, an awful lot."

"Does it attack children?"

"More than anybody."

"Do they die of it?"

"Plenty," said Marguerite.

Fantine went out and read the letter once again on the staircase. At night she went out, and could be seen proceeding in the direction of the Rue de Paris, where the inns are. The next morning, when Marguerite entered Fantine's room before day-break, for they worked together, and they made one candle do for them both, she found her sitting on her bed, pale and chill. Her cap had fallen on her knees, and the candle had been burning all night, and was nearly consumed. Marguerite stopped in the door-way, horrified by this enormous extravagance, and exclaimed,—

"Oh! Lord! the candle nearly burnt out! something must have happened."

Then she looked at Fantine, who turned her close-shaven head towards her, and seemed to have grown ten years older since the previous day.

"Gracious Heavens!" said Marguerite, "what is the matter with you, Fantine?"

"Nothing," the girl answered, "I am all right. My child will not die of that frightful disease for want of assistance, and I am satisfied."

As she said this she pointed to two Napoleons that glistened on the table.

"Oh! Lord!" said Marguerite; why, 'tis a fortune; where ever did you get them from?"

"I had them by me," Fantine answered.

At the same time she smiled, the candle lit up her face, and it was a fearful smile. A reddish saliva stained the corner of her lips, and she had a black hole in her mouth—the two teeth were pulled out.—HUGO, *Les Misérables*—*Odontographic Journal*.

THE DENTAL RECORD, LONDON: OCT. 1, 1889.

HOSPITAL TEACHING.

THE re-opening of our dental schools for the winter session brings us once more face to face with the problem of how to instruct our students in such a way that they may become, not only competent to support themselves in after life, but of practical service in raising the position of our specialty as a profession. A nation's hope lies in its children; the hope of dentistry centres round its students. It therefore behoves all educational authorities to exert themselves in imparting to those entrusted to their care the best and most thorough instruction which it is possible to devise.

Educational failures of all sorts are either faults of *system* or of *inefficiency of teaching*. Now the primary system of dental instruction is formulated in what is known as the curriculum, and in this country the dental curriculum is in the hands of the Royal College of Surgeons. That it is faulty and in need of urgent amendment is acknowledged on all hands, and yet no one appears to take the trouble of trying to procure the much needed redress. To attempt piecemeal legislation in a matter of this sort would be a fatal mistake; what we want is the thorough ventilation of the subject by competent authorities, who would then be in a position to send in a formal requisition embodying the reforms which appeared to them desirable. If the authorities of our dental schools, both in this country and in Ireland and Scotland, could take common action in the matter, and present a common requisition addressed to *all* the bodies in the United Kingdom who grant licences in dental surgery, so much the better—and this is the course which would not only be in accord with the wishes of the majority, but would doubtlessly redound to the credit as well as the benefit of the profession. But if there should be insurmountable

obstacles in the way of this course being taken, then it becomes absolutely necessary that something should be done in this country, and the College of Surgeons approached with the object of redressing what almost amounts to a scandal. We understand that a memorial was prepared by the authorities of Owens' College, Manchester, not long ago calling attention to one or two points which required amendment, but they were induced to withhold it on the understanding that a general movement was likely to be set on foot. Surely the time has come when the matter must be thoroughly sifted. We will not attempt to dogmatise on what is, and what is not necessary; the competent authority to do that would be a committee drawn from the various schools throughout the country. Each dental school should first of all take the matter into consideration, and then send one or two representatives to a committee which might appropriately be held in London, and ventilate the question very thoroughly.

But however perfect the system may be, nothing can compensate for inefficient teaching. Here is the real crux after all. It is true that here and there a brilliant student may get on in spite of all educational obstacles, but what we have to provide for is not the brilliant individual—he can take care of himself—but the *average* student who requires all the attention which can be bestowed upon him. And it is in the direction of clinical teaching that the dental student looks for most help. In the lecture theatre he is too often treated to a soulless, vapid dissertation, from which he gathers little or nothing; or may be to an eloquent and high-flown lecture—excellent in its way, but rather above a dull student's grasp. It is at the chair side that he is most likely to glean any real practical knowledge, for he can there ask for explanations of what he does not understand, and have ocular demonstrations of operative manipulation which before had appeared difficult, or even impossible. Lectures are of course necessary, and have their own value; but you might just as soon expect a student to become a good dentist by attending lectures on dental surgery, as you

would a man to become familiar with seamanship by making him a Lord of the Admiralty. What we want is that each surgeon attached to a dental hospital should impart to the students something of himself. The genius of teaching is rare; but it should not be lost sight of in filling appointments to the staffs of our hospitals, for it is here that the principal strength of our educational machinery must of necessity be brought to bear in training up our young men for the responsible posts which they will afterwards be called upon to fill.

Quack
Nostrums. We are sorry to find that there is a growing tendency to make use of nostrums put upon the market, about which little or nothing is known of their composition or action. In America dentists have been flooded with "Local Anæsthetics," warranted to do anything and everything under the sun. Of course the majority of all such things are mere trash, and some times worse, for they may contain ingredients which are positively injurious. In this country there seems to be some sort of demand for secret drugs in the treatment of aching or pulpless teeth, as if we had not already a perfect legion of remedies of which we know their specific action. The demand must exist or the supply would not be advertised. What we protest against is the employment of any drug of which we cannot trace its action, and the encouragement of merely empirical and ignorant treatment. Perhaps no drug of the kind referred to has wormed its way into medical favour with greater persistency than chlorodyne. Everyone pretended to know exactly what it contained, and therefore had the less hesitation in using it. And, lo! now either it or its ghost appears in the official British Pharmacopœia, under the high-sounding title of "tinctura chloroformi et morphinæ. The following is the formula—long enough to please the most fastidious:—

Chloroform	...	...	...	1 fluid ounce.
Ether	...	...	...	2 fluid drachms.
Rectified Spirit	...	...	...	1 fluid ounce.
Hydrochlorate of Morphine	...	...	...	8 grains.
Diluted Hydrocyanic Acid	...	...	...	$\frac{1}{2}$ fluid ounce.
Oil of Peppermint	...	...	...	4 minims.
Liquid Extract of Liquorice	...	...	...	1 fluid ounce.
Treacle	...	...	...	1 fluid ounce.
Syrup	...	...	...	A sufficiency.

Dr. Prosser James in his handy little guide to the B.P. thus refers to the new addition : " Would this learned body (the General Medical Council and its Pharmacopœia Committee) take a step backward toward the mithridate of ancient pharmacy? No ; for the preface asserts that ' pains have been taken to bring the whole of the matter up to the existing state of knowledge.' So this must be something modern. Somebody whispers ' Chlorodyne ' ? Yes ; here is an imitation of a quack nostrum, remarkable for the unblushing effrontery with which it has been pushed, and the sages of the General Council of Medical Education and Registration have abandoned their dignity in order to fish ' the existing state of knowledge ' from the polluted streams of unscrupulous advertisements."

REVIEW.

" A GUIDE TO THE ALTERATIONS IN THE BRITISH PHARMACOPŒIA, (1885)." By PROSSER JAMES, M.D. (London : J. & A. Churchill, 1889.)

THE fact that a third edition of this little book has been called into requisition, proves that it supplies a want which is distinctly felt. It comprises an epitome of the changes, and an account of the new preparations, their uses, doses, &c., with an exceedingly useful therapeutical commentary, which Dr. Prosser James contrives to make interesting.

There are several of the new preparations described which are in common use by dentists, and which might be read with advantage, such as boric acid, iodoform, hydrochlorate of cocaine, gelsemium, thymol, and others. As a specimen of how a *dry* subject may be made entertaining, we would commend the chapter on *Cascara Sagrada* (p. 100), in which Dr. Prosser James contrives to combine sarcasm with instruction—a difficult feat, as we all know. We have nothing but praise for this little "Guide to B.P.," and heartily recommend it to our readers.

GOSSIP.

THE discussion on anæsthetics at Brighton is scarcely over, before we read of another chloroform accident in the dentist's chair. Mrs. Neale the wife of Mr. Alfred Neale, of Crompton Road, Handsworth,

24 years of age, had decided to have several teeth extracted in order to have an artificial set inserted, and on Saturday a medical gentleman, who had been in the habit of attending the family, together with a local dentist, was called in. Chloroform was administered to the lady, but before she had drawn her breath half a dozen times she suddenly slipped from her chair, and died almost immediately. The professional gentlemen engaged are stated to have taken every precaution in the administration of the anæsthetic. The deceased had only been married twelve months. An inquest was held on Tuesday at the Stork Hotel, Heathfield Road, before Mr. F. W. Topham (Deputy-Coroner for the district). The medical evidence went to show that there had not been sufficient chloroform given to the deceased to kill a baby. In proof of this the doctor himself took more chloroform while giving his evidence without it having the slightest effect. There could be no doubt that death had resulted from syncope, accelerated by the chloroform Mrs. Neale had taken. The Coroner said he thought it unnecessary to call further evidence. He thought everybody concerned was entirely exonerated from blame. The jury returned a verdict in accordance with the medical evidence. It seems strange that after so many warnings dentists will persist in allowing their patients to take chloroform for an operation which can easily be performed—and with greater safety—under a more favourable anæsthetic agent.

FRUIT AND EGGS.—Professor Fresenius, of Wiesbaden, after a long series of chemical analyses, declares that an egg contains as much nourishment as a pound and an ounce of cherries, a pound and a quarter of grapes, and a pound and a half of russet apples, two pounds of gooseberries, and four pounds of pears; and that 114 pounds of grapes, 127 pounds of russet apples, 192 pounds of pears, and 327 pounds of plums are equal in nourishment to 100 pounds of potatoes.—*British Medical Journal*.

THE following amusing account of an "advertisement engagement" with verbal weapons, is furnished by a correspondent to the *Chemist and Druggist*:—The cuttings consist of a series of advertisements put forth by two rival druggists, of whom my friend is one. The first of the series is a preliminary whoop from the enemy (whom we will style the Pharmaceutical Prairie Flower), to the effect that

"exaggeration by insinuation" is not his style. He "employs no subterfuge" in advertising his ginger-ale as "the best on earth." To this my friend the (Bayswater Game Cock) briefly, but effectively, replies that the simple statement of the superiority of his ginger-ale over every competitor satisfies him. He does not draw upon his imagination for half columns of statistics, and can, therefore, heartily endorse all that has been said about exaggeration, and so forth. Upon this the P. P. F. immediately "bluffs," by the announcement that he has "put up One hundred dollars in Sam Kemble's hands to be given to the Women's Relief Corps" if every statement he has made with regard to his ginger-ale is not true. Sam certifies the deposit (for a consideration) underneath. The B. G. C. parries this blow neatly in the next issue. "Putting it up," says he; "that is precisely what we are doing—putting it up as fast as we can, and have, therefore, no time to waste in tantalising the W. R. C. with visions of wealth they will never realise." This return thrust appears to have sickened the P. P. F. He begins his next with "Bah! How the lords do fluke! Wriggling, squirming, crawling, and sneaking away under false expressions." He holds up to ridicule their "unsightly, inellegant (*sic*), and nauseous beverage;" blames himself for having "advertised it by controversy," and "retires permanently from a controversy rendered disgusting by the moral turpitude of the would-be imitators" of his ginger-ale—"the best on earth." (Exit the P. P. F.) Then the B. G. C. "ups" and crows "A Fond Farewell," thus: "The expiring throes—appropriately styled 'Bah!'—which announce the sufferer's withdrawal from further futile molestation of his competitors are not the first instance of the perpetrators of an unprovoked attack being forced to retire discomfited, &c., &c. For fecundity of vituperative resource, combined with pointless irony, we gracefully yield the palm to the 'best on earth;' but we do claim the dual capability of 'minding our own business,' and of affording to a grateful public, at the ridiculously low price of 5c., that boon and blessing to men—our ginger-ale, best in the city; not a firey, scorching throat liniment, but a pleasant, cooling beverage!"

A WEEKLY paper, under the heading, "Trifling with Toothache," has the following paragraph:—Folk who suffer from toothache will be curious as to the professed cures of this distressing malady said

to be wrought by a clerical gentleman at Croydon. His name is significant, and full of hope for those who are struck by coincidences. Hitherto the extraction of one of man's "ivories" has meant anguish. Mr. — will remove half-a-dozen of them, and leave his client—we can scarcely say patient here—smiling. This delightful advance on ordinary dentistry is known as "Cure by suggestion," and is a sort of blend of various "isms," such as mesmerism, hypnotism, and so on. It is a wonderful story altogether, and if the name of the professor of this new science had been "Truth," our surprise would have been unbounded.

A CORRESPONDENT sends us a Shakespearean (?) effusion on the subject of toothache, but omits to mention where taken from. Judging from the condition of the cutting on which the words are printed, it would appear to be sufficiently ancient to rank in the era of the "immortal bard."

To have it out or not—that is the question;
 Whether 'tis better for the jaws to suffer
 The pangs and torments of an aching tooth,
 Or to take steel against a host of troubles,
 And, by extracting, end them? To pull—to tug—
 No more: and by a tug to say we end
 The toothache, and a thousand natural ills
 The jaw is heir to—'tis a consummation
 Devoutly to be wished. To pull—to tug—
 To tug! perchance to break—ay, there's the rub;
 For in that wrench what agonies may come,
 When we have half dislodged the stubborn foe,
 Must give us pause; there's the respect
 That makes an aching tooth of so long a life;
 For who would bear the whips and stings of pain,
 The old wife's nostrum, dentists' contumely,
 The pangs of hope deferred, kind sleep's delay,
 When he himself might his quietus make
 For one poor shilling? Who would fardels bear,
 To groan and sink beneath a load of pain,
 But that the dread of something lodged within,
 The linen twisted forceps, from whose pangs
 No jaw at ease returns, puzzles the will,
 And makes it rather bear the ills it has
 Than fly to others that it knows not of?
 Thus dentists do make cowards of us all;
 And thus the native hue of resolution
 Is sicklied o'er with the pale cast of fear;
 And many a one, whose courage seeks the door
 With this regard, his footsteps turns away,
 Scared at the name of dentist.

It is said that a Frenchman, named Maillard, has just succumbed to the evil effects of professional fasting. The unfortunate man had succeeded in accomplishing a fast of twenty-five days, but soon

afterwards was attacked with hæmatemesis, and died at his hotel in Lyons.

THE following particulars respecting Dr. Cunningham's lectures at the National Dental Hospital are sent to us for publication :—The course is something between the ordinary college course, and that of a regular post graduate course, certain subjects in each year being treated with special detail. The following are some of the special subjects which will be discussed during the present course :—(1) A consideration of Dr. Davenport's views as to the natural form and arrangement of the dental arches, as affecting methods of treatment, to be illustrated by models kindly lent by Dr. Davenport. (2) The result of some experiments as to the chemistry of phosphate cements, conducted by the eminent chemist, Mr. Pattison Muir. (3) The rotary method of gold filling, illustrated by appliances kindly furnished by Herr Herbst. (4) Pulp capping and its results, tested by statistics. (5) Statistics showing the results of immediate treatment after seven to four years. (6) The Gartrell and some other forms of removable Bridge-work. The course begins on Monday, Oct. 7, at 6.30 p.m., and is continued weekly at the same time until Christmas.

A PROVINCIAL newspaper contains the following advertisement :
“Wanted, a Doctor to vaccinate a child in a Hygienic manner.”

AN American dental journal in a recent obituary notice says that the deceased was “a Christian from *principle*.” This is evidently a feather in the dental cap on the other side of the water.

WE regret that one of the demonstrations at Brighton was inadvertently omitted by our reporter. Mr. Chas. F. Rilot (demonstrator of non-cohesive gold filling at the Dental Hospital of London) filled two cavities in lower second molars, one with and one without the use of the rubber dam. The gold employed was Ash's hard-rolled gold cylinders, Style C, and hand-pluggers were used throughout.

THE following abstract of a paper, read at the recent meeting of the British Association, is given in the *British Medical Journal* :—
DEVELOPMENT OF THE WISDOM-TEETH.—A paper on this subject by Dr.R. Levi was read, in the absence of the author, by Dr. J. G. Garson. In January and December, 1885, and in November, 1886, when inspecting the conscripts born in the years 1864, 1865, and 1866, in the military districts of Monza (Lombardy) and Ancona (Marche), he noted the development of the wisdom-teeth. The total number of individuals examined was 732 —namely, 366 natives of the military district of Monza (Lombardy), and 366 of the military district of Ancona (Marche). Their average age was 20 years and 5 months. The two groups were divided as follows in regard to the number of the wisdom-teeth :—

Number of the Wisdom-teeth.	Lombards.			Marchigiani.			Total.		
	Number of cases.	Proportion per cent.	Total of wisdom-teeth.	Number of cases.	Proportion per cent.	Total of wisdom-teeth.	Number of cases.	Proportion per cent.	Total of wisdom-teeth.
0	173	47'3	—	155	42'4	—	328	44'8	—
1	43	11'7	43	48	13'1	48	91	12'4	91
2	61	16'7	122	67	18'3	134	128	17'5	256
3	30	8'2	90	22	6'0	66	52	7'1	156
4	59	16'1	236	74	20'2	296	133	18'2	532
TOTAL.. ...	366	100'0	491	366	100'0	544	732	100'0	1'035
Average number of wisdom-teeth in each individual.	1'34			1'49			1'41		

The small number of individuals who had an odd number of wisdom-teeth was pointed out. This was evidently a consequence of the fact that the wisdom-teeth appeared generally two by two.

Discussing the question of the transplantation and reimplantation of teeth, Dr. Nieriker, of Zurich, gives the following rules for securing a satisfactory result: remove the whole pulp from the dental root canal; disinfect the latter and fill up with a zinc cement; thoroughly scrape out the periosteum, keep the tooth in a corrosive sublimate (1 per mille) or carbolic (5 per cent.) solution for a few minutes, insert it into the alveolus and duly fix it between its neighbours.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

DENTAL EDUCATION.

To the Editor of the DENTAL RECORD.

SIR,—You published some little time ago the proceedings of the June meeting of the Students' Society of the National Dental Hospital containing an account of one of the members' views on "Dental Education." Into the general tenour of Mr. Fisk's views I do not wish to enter, his ideas are at least hearty although hardly orthodox. There is one point, however, which I wish to draw attention to in which he makes one or two mistakes, viz., the respective fees of general and dental students. With regard to books and instruments, it is a mistake to imagine that a dental student has to spend more money on books than the general student; and one would like to know *what* instruments the general student buys with his *ten pounds*; I have never seen one of those gentlemen with anything beyond dissecting and pocket cases and a stethoscope, and the lot were often second-hand and on their last legs. But the principal item which is liable to lead astray is the absurd figure of £63 as a mechanical premium. Now it is quite possible to become thoroughly familiar with mechanical dentistry without paying a premium at all—there are plenty of dentists who are ready to receive intelligent youths for *five years* on these terms. But when it comes to a premium, why fix upon £63? Is it true that there are dentists who would not like their names known—"big guns" Mr. Fisk calls them,—who crowd mechanical pupils into their workrooms by the bushel, for any premium they can lay their hands on? If so, this is veritable dental "sweating." I served my time with a provincial dentist who *taught* his pupils properly, and who expected a hundred guineas as reasonable premium. I am told that in London a pupil who expects to be well taught, and looks for the *personal* attention of his principal pays a much larger sum. The first part of our career is very important, and we should not run away with the idea that a *cheap* apprenticeship is all we require for our sons.

Apologizing for taking up so much of your valuable space,

I am, Yours &c.,

AN OLD-FASHIONED L.D.S.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from August 1st to August 31st, 1889 :—

				London.	National	Victoria.
Number of Patients attended ...				—	1886	901
Extractions	{ Children under 14	...	...	462	381	759
	{ Adults	...	...	1016	625	
	{ Under Nitrous Oxide	...	...	738	877	
Gold Stoppings ...				110	61	48
Other Stoppings...				578	323	49
Advice ...				100	419	—
Irregularities of the Teeth				45	58	—
Miscellaneous and Dressings				240	122	228
Total ...				3,289	2,866	1,172

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and *Answers* are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

THE EXTRACTION OF LOWER MOLARS.—Since the introduction of lower hawks-bill forceps it has become the general practice to extract all lower molars with this form of forceps. In the majority of cases the third molar can be more readily got at with an elevator, and an ordinary straight one answers the purpose in the generality of cases. The tendency of the young operator is to try and insert the point of the elevator obliquely between the tooth and its alveolar process, and because he meets with little success he is apt to give up a useful instrument. If the elevator be properly used—steadily and deliberately—the pain to the patient is considerably less than the use of the forceps. The mouth should not be too widely opened, otherwise the angles of the mouth become tense, and the elevator fails to reach the back of the mouth in the proper direction. The cheek should be kept out of the way by one of the two fingers passed one on either side of the alveolus, and the elevator carried in a perfectly *horizontal* position between the second and third molar, the flat side of the blade towards

the tooth to be extracted; the depth of the point of insertion, and the length of the thrust must be governed by circumstances, but one need not hesitate about passing clean through soft tissue, and even bone if necessary, the great thing to remember being the *parallelism* of the blade with the proximal surface of the tooth to be extracted. A steady *quarter turn* generally dislodges the tooth, but sometimes it requires a pair of forceps to lift it out of its socket.

In extracting the first and second molars, the principal point to remember is the *direction* of the leverage. If a number of lower jaws (in the dry state) be examined it will be found that the *inner plate* of alveolus offers the least resistance, and that in addition to this the direction of the teeth themselves is generally inwards. Bearing in mind these two points, it is easy to see that the bulk of the leverage should be *inwards*, and not *outwards* as generally practised. It is, of course, much easier to depress the handles of the hawks-bill forceps, but the tooth will part with its socket much more easily if the handles be *elevated*, and the principal strain be on the inner plate of alveolus; the leverage may be reversed after the loosening of the tooth for the completion of the extraction. This was the direction of the force used by those who in days gone by used the old pattern forceps; and it must strike anyone who is observant, that the lower molars as now extracted by most of our younger operators, do not seem to part company with their alveoli quite as quickly or as gracefully as they used to do in days of yore.

If these hints prove of the slightest service to any of the readers of the RECORD, I shall be more than repaid for attempting to put them together —
PROVINCIAL.

QUERIES.

BUNSEN BURNERS.—Can anyone tell me what the exact proportions fair and gas apertures ought to be in making a Bunsen burner which will give out a good blue flame?—OXYHYDROGEN.

CALCIUM CHLORIDE.—If any of your readers have used this drug in treating affections of the dental periosteum, will they kindly give their experience, and say what dose is best?—A. A.

ANSWERS.

ROOT FILLING.—W. G. has fallen into the pit where most of his brethren have preceded him. It has become the fashion of ignorance to imagine that every pulpless tooth which is treated is merely a mass of *septic dentine* which requires disinfecting, and that the condition of the alveolo dental periosteum may be altogether ignored. If matters were reversed, our intelligence would not suffer. W. G. has also swallowed the "gas" theory—which he calls "irritatory;" but if the epithet be applied to the theory and not to the gas, we shall be nearer the truth. How can he prove that dentine has this propensity for swallowing such quantities of gas? The dentine may be more or less (often less than W. G. imagines) saturated with a septic fluid, but the principal mischief does not surely

lie here. Let me take W. G. on his own ground. A patient comes to him with a pulp which has been chronically inflamed for a considerable period. He destroys that stinking pulp with arsenious acid, removes it, and fills his root *permanently* at the second sitting. Why does he not institute a long series of dressings in order to get rid of the "irritatory gas" which he talks about? If W. G. will cut some sections of so-called abscessed teeth with membrane attached, he will have some indication of what he has to treat. Infected dentine may well take care of itself (and does) if thoroughly treated at *one sitting* and the root canal be *properly* filled with an oxyphosphate of zinc containing 20 per cent. of hydronaphthol or plaster of Paris made into a thin paste with a watery solution of hydrarg. perchlor. (1 in 500). The question is too wide to enter into thoroughly in an occasional column, but if W. G. will give *immediate root filling* a good trial, and take notes of his cases, he will find that an inflamed dental periosteum will heal more kindly by this method than by any other. If in writing hurriedly I appear to W. G. to be dogmatic, he will forgive me.—OLD FILE.

ENAMEL BODY.—"Castor" would like to know what a great many people have been on the look out for, but hitherto have not been able to procure. He can probably succeed in building up a pivot tooth back by leaving the platinum points rough, building up in wax, inserting in pumice and plaster, boiling out, and melting in some opaque glass powder with the blow-pipe. Should anyone succeed in finding out a good strong enamel body of gum colour that can be fused on to 18 carat gold with a blow-pipe, there are one or two besides "Castor" who would like to hear from him.—POLLUX.

It would save much delay if ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) were sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 11.

Original Communications.

SOME NOTES ON THE EARLY ART OF EXTRACTING TEETH.

By FREDERICK SLEEP, L.D.S.Glas. & Dub.

(Continued from page 447.)

PART II.

THE Arabian physicians have been accused, and justly, no doubt, of bombast, mystery, and exaggeration, and the ravings of Geber, according to Dr. Johnson, was the origin of the word Gibberish—nevertheless, making allowance for Oriental extravagance, medicine as a whole derived much that was altogether new and valuable from them. It is noteworthy that the separation of the healing art into the three branches of medicine, surgery, and pharmacy originated with them.

As we can only judge by comparison and contrast, we will contrast the worthy Albucas with England's greatest physician, John of Gadesden, who lived, 1320, two hundred years after the Arabian. This worthy, the author of the "Rose of Anglia," is recorded by Chaucer among the most celebrated writers on physic. Having had the opportunity of handling the earliest black-letter edition, bound in timber and pigskin, I enclose a translation from the original of some of the most remarkable words of this physician. The contrast can only serve to raise in the thoughtful mind an admiration for the almost unknown Arabian, who, living in a superstitious age, among the most imaginative people, threw off the shackles of ignorance and stepped out in the manly independence of thought that is characteristic only of great minds. Gadesden tells us that we may grow new teeth or make them erupt easily by rubbing hares' brains on the gums. He tells us, too, that the juice of wormgrass with strong vinegar applied to the teeth will surely make them fall out. The subject of extraction was evidently entered on with fear and trembling, and direful preparations of purgatives, &c.,

preparatory to the operation are advised, else the matter will become dangerous, as the same matter or humour may descend on the lungs and cause suffocation. He, however, advises that teeth which are firm are best left alone, and after resuscitating the old caution about the leaden forcep at Delphos, he avers that the medulla of the tooth arises from the brain and descends to the lungs.

Extraction was performed with a tenaculum after free lancing. Root extraction, however, he looked upon as rarely successful, yet he recommends an elevator broad at one end and pointed and sharp at the other. He, however, looked with fear on its application, for he tells us it may cause injury to the eyes, ulcerations of the parts, and fever. Celsus again comes to his rescue, and he quotes the value of Pyrethin root, salt and vinegar, all bruised together and applied every three days to make the teeth fall out. If, however, it fails, yet he assures us they become so loose that extraction is child's play. I wish some brother Forcep would find out such a compound now, nitrous oxide gas will live a short life and local anæsthesia of every soil would die a natural death. The golden age of extraction having passed, we resort to cold steel again. Time, however, works wonders; what is fable in one age is fact in the next, so I will not ridicule.

John ^JArden is credited by Dr. Friend as the first man who revived surgery in England. Whether his works were ever printed is very questionable. My researches with regard to him were so poorly rewarded that I began to wonder whether he ever existed. Just however as I receive these proof sheets his written work has come to light, but so illegible and recondite is the caligraphy and so defaced the manuscript, that I must leave the translation (if worth recording, which is doubtful) to a more favourable opportunity.

Science received a check in the beginning of the 16th Century in what is popularly known as the Renaissance, which, whilst it gave an impulse to literature by holding up models of style, was yet a drag to native genius, by offering the thoughts of a different people and a different epoch, as the thing, the whole thing, and nothing but the thing requisite for thinking man, consequently the native hue of genius got sicklied o'er and "lost the name of action." Learning was thought greater than doing, consequently the physician like the rest wrote in a language he did not think in, and fed only on the thoughts of those who preceded him by centuries. The influence of that time will, whether for good or evil, be always felt,

although we have our own literature and boast of the well of English undefiled. Our medical nomenclature reminds us of that time at every turn ; the first symbol of a prescription is an invocation to Jupiter and a part of the rag and tag of those bygone times when self-satisfaction and pride warred with reason. Men of the Roger Ascham type averred that "even as a bird flyeth with one wing, so can man only attempt to soar with one language ;" consequently lexicon thumbing held very much the place as a national employment as the rage for pianoforte gymnastics among the ladies of the present day ; or the simpering of French, the painting of butterflies, and the working of samplers among our grandmothers.

Necessity, however, is ever calling for something more practical : pain has a voice, too, that will not be soothed with fine phrases, consequently notwithstanding the authority of ages we find one man bolder than his fellows, feeling cautiously and trying the result of *experiment*. The trammels once fairly off, the demand was supplied by such men as Newton, Hunter, and Stephenson, men who gave hope to the dying, bridged space and time, discovered worlds of wealth unknown before, and demonstrating the possible and real served to bless mankind more in one epoch than ages had done before. We must not then think hardly of Hunter at his expression to Sir A. Carlisle : "They wanted to make an old woman of me, or that I should stuff Latin and Greek at the University," but added he, significantly squeezing his thumb-nail on the table, "These schemes I cracked like so many vermin as they came before me.

That the neglect of the classics affected his style is only too possible, but his genius suffers nothing thereby. Style and oratory, pleasing as they may be to the level crowd, would have been a bad exchange for what we have of his unsurmountable and characteristic industry.

In the year 1518, three years before the birth of Forestus, was published "The worke of that skilful Chirurgeon, John Vigo." Dentistry, however, gained nothing from him, for his article on "Extraction" is merely repeated parrot-like from Galen. And he tells us that, "The teeth are wont to be vered through a reumatible mattier distilling from the braine and through the fault of the stomake, but seeing (says he) that the teeth serve for comelinesse, for chawing of meate and for pronounciation, therefore they must be cured with all diligence." Then quoting Galen he says, "if medicine prevaile not for the swaging of the toothache we must

descend to the last remedie, that is to say, we must drawe them out by the roots." So much for the Pope's physician.

Pare and Forestus, although different countrymen, lived, practised, and published about the same time. I will take Forestus first, though I believe Pare's works preceded that of the Leyden Professor.

He was a diligent observer, discriminator of disease, and a clever surgeon. He gave the first lecture in medicine at the opening of the Leyden University. From his voluminous work I give a translation from *liber* xiv., where we find the pelican spoken of as an instrument commonly used, and moreover, he speaks of an improved instrument used in his own practice—but to the text.

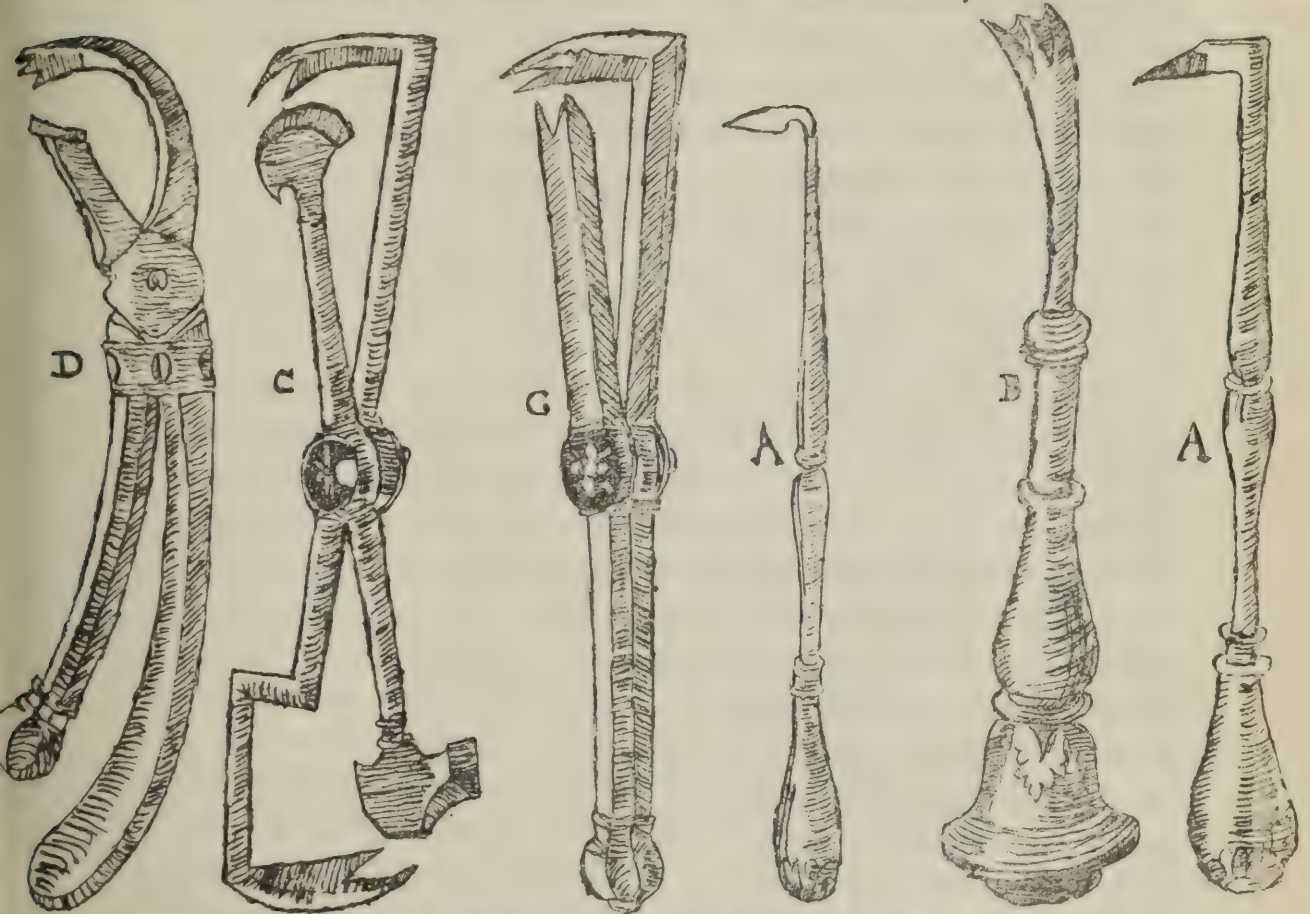
CONCERNING CERTAIN CORRODED AND ROTTEN TEETH HAVING
FISTULAS AND IN WHAT MANNER THEY SHOULD BE
EXTRACTED.

"Some time ago a fellow collegian held a consultation with me concerning two corroded and rotten teeth and whether extraction was advisable. Now the teeth having fistulas I condemned them, for the teeth being hardened in the jawbone at the same time as it was formed, they might extend their disease to the maxillary bones and cause their death. Under the circumstances, I advised their extraction, but not with the pelican as surgeons call a certain instrument, lest the teeth be broken as indeed is usually the case, but with another curved instrument, one better suited for the operation, and used among the common barbers, and called by them the ox's foot ("Pedem bovinem, Pied de biche, of the French"). My friend therefore proceeded as advised and operated successfully.

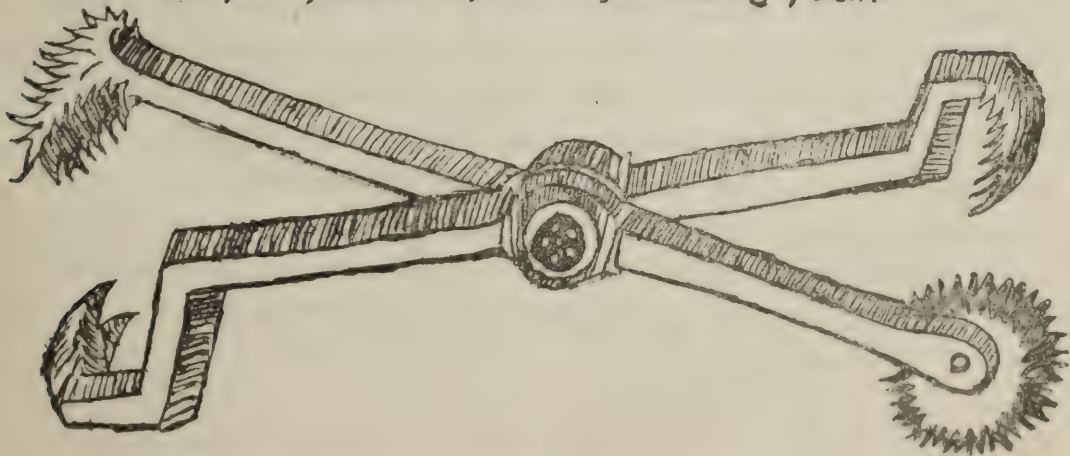
Ambrose Pare published his works about 1540. So greatly was this illustrious man esteemed that he held the position of Surgeon to three successive kings, and his works were translated into every European language. With the intuitive penetration and perception that is born, not made, with a determined will and more than ordinary mechanical dexterity, he achieved a position in the temple of fame that many a great man may envy. His name is so inseparable from a history of anything appertaining to dental surgery that I have thought fit to transcribe much of his teaching, and have, moreover, carefully traced the instruments described by him. One aphorism that he records is that "Remedies known and approved by use and reason are to be preferred before such as are unknown or but lately found out." Another which, taken with the one given, will serve to exemplify his rules of thought and roundabout

*The effigies of Forcipes, or Mullers
for the drawing of teeth*

*Instruments for scraping the teeth
and a three-pointed levatorie*



The form of another Instrument for drawing of teeth



"After Ambrose Pare, 1540."

common sense. "The surgeon must be active, industrious and well handed and not trust too much to books." He says teeth are drawn either for that they cause intolerable pains which will not yield to medicines or else for that they are rotten and hollowed so that they infect the sound and whole teeth, and draw them into like corruption, or because they stand out of order. Besides, when they are too deep and strongly rooted, so that they cannot be plucked out, they must oft-times be broken of necessity that, so you may drop some caustic thing into their roots which may take away the sense and consequently the pain. The hand must be used with much moderation in the drawing out of a tooth for the jaw is sometimes dislocated by the too violent drawing out of lower teeth. But the temple, eyes, and brain are shaken with greater danger by the rude drawing of the upper teeth.

Wherefore they must first be cut about that the gums may be loosed from them, then shake them with your fingers and do this until they begin to be loose, for a tooth which is fast in and is plucked out with one pull oft-times breaks the jaw and brings forth the piece together therewith, whence follows a fever and a great flux of blood not easily to be staid (for blood and pus flowing out in great plenty is in Celsus' opinion the sign of a broken bone) and many other malign and deadly symptoms. Some have had their mouths so drawn away that they could scarce gape. Besides if the tooth be much eaten, the hole thereof must be filled thereto lest it be broken under your forceps when it is twitched to be plucked out and the root remain ready in a short time to cause grievous pain. But judgment must be used and you must take special care lest you take a sound tooth for a pained one. For oft-times the patient cannot tell for that the bitterness of pain by neighbourhood is equally diffused over all the jaw. Therefore for the better plucking out of a tooth observing these things which I have mentioned—the patient shall be placed in a low seat bending back his head between the tooth drawer's legs, then the tooth drawer shall deeply scarify about the tooth, separating the gums therefrom with the instruments marked with this letter A and then, spoiled as it were of the walls of the gums, if it grow loose it must be shaken and thrust out with the three pointed levatory noted with the letter B. But if it stick in too fast and will not stir at all then must the tooth be taken hold of with some of these toothed forceps marked with the letters C, D, E, first one, then another as the greatness, figure, and site shall seem

to require. I would have a tooth-drawer expert and diligent in the use of such toothed mullets for unless one know readily and cunningly how to use them, he can scarce so carry himself but that he will force out three teeth at once, oftentimes leaving that untouched which caused the pain. After the tooth is drawn let the blood flow freely so that the part may be freed from pain and the matter of the tumour discharged. Then let the tooth drawer press the flesh of the gums on both sides with his fingers where he took out the tooth that so the socket that was too much dilated and oftentimes torn by the violence of the pluck may be closed again. Lastly the mouth shall be washed with oxycrate and if the weather be cold the patient shall take heed not to go much in the open air, lest it cause a defluxion upon his other teeth. He further says, "In the bitterness of pain we must not presently run to tooth-drawers or cause them presently to go in hand to pluck them out. First consult a physician who may prescribe remedies according to the variety of the causes. Now there are three intentions of curing:—first concerns diet; the second the evacuation of the defluxion or antecedent cause; the third for the proper remedies to assuage the pain. If teeth become loose by a fall or blow they must not be taken forth but restored and fastened to the next that remain firm, for in time they will be confirmed in their sockets as I tried on Antonie De la Rue, a tailor, who had his jaw broken with the pommel of a dagger and three of his teeth loosened and almost shaken out of their sockets. The jaw was restored, the teeth were also put into their places and bound to the rest with a double waxed thread. By these means I brought it so to pass that he within a while after could chew as easily upon these teeth as upon the others. I heard it reported by a credible person that he saw a lady of nobility who instead of a rotten tooth she drew made a sound tooth drawn from out of her waiting maid's head at the same time to be substituted and inserted, which tooth in progress of time, as it were taking root grew so firm that she could chew upon it as well as any of the rest. But as I have aforesaid I only have it on hear say." Concerning fracture he remarks, "It is a certain sign that the fracture is set if the teeth fastened therein stand in their due order and rank."

Fabricius, born at Aquapendente in Italy, in 1537, next claims our consideration. His surgical works acquired such reputation as to gain for him the title of father of modern surgery. He studied

under Fallopius at Padua. The works of this eminent man are of considerable interest to the dentist who would trace the growth of his profession. He has been continually referred to as the originator of the pelican, but it is evidently a mistake—that instrument being in common use for a considerable time as may be gathered from the extracts of Forestus. We have, however, a fuller description of useful instruments than may be noticed in any former writer but here is a translation of his words.

The greater number of the instruments for extracting teeth are pincers, and from the fact that their beaks may be fancifully likened to the bills of different birds, their names follow from their likeness. Some are for pulling the back teeth, and are commonly called pelicans, inasmuch as they resemble the beak of that bird more than that of any other. There are two kinds of pelicans, too, just as there are two rows of teeth—right and left—superior and inferior. Again, there is another instrument for incisors resembling a beak.

The fourth resembles a raven's beak and is fitted for extracting stumps. The fifth and sixth are called in vulgar Italian *cagnoli*, because their sure grasp resembles a dog biting, and is a capital instrument for extracting those teeth where the pelican failed to grasp the tooth or where from other causes it is better indicated. The seventh is called *terebra* (the same instrument was called *tariere* by the French), in common Italian *trivellino*, and supplies the place of a lever because the teeth act as fulcrums for the other ones affected which stand in proximity, by which means they are extracted without difficulty. The eighth are the toothpicks which are instruments used for separating the teeth preparatory to extracting them when jammed close together more quickly than could otherwise be done and with less damage to the jaw.

A ninth is given in a French translation but does not occur in the original Latin. It is an elevator having three claws similar to that described and figured by Pare—which see.

The last operation on the teeth is the replacement of those extracted with new ones which resemble them. He then advises what Albucasis centuries before did—that they be made from the ham-bone of the bullock.

The Fifteenth and Sixteenth Centuries we have reviewed must be considered as a time of incubation and preparation. Hitherto the abstract speculations of Galen had dazzled the mass of medical practitioners who had become negative to his teaching. Slowly,

however, the practical common sense of the noble father of medicine was gaining the ascendancy over the minds of the thinking world, and before long the powers of nature were to be recognised, symptoms and the causes of disease studied, and the wisdom of Hippocrates expressed 400 years B.C., was to be the foundation stone of a system of inductive philosophy which was calculated to raise medicine to a position beyond the dreams of the most ardent imagination. Wavering, there might have been, in particulars as the genius of a Boyle or a Sydenham directed the thoughts of men to a chemical theory of disease, or again, mechanical or other theories may for a moment hold their minds in captivation, but the grand principles of observation inculcated by the physician of Cos were destined to remain for ever.

The Seventeenth Century which I shall enter on presently received an educational impetus through the classical Dr. Linacre who, aided by Cardinal Wolsey, procured letters patent in 1618 from the king to incorporate the Royal College of Physicians, antecedent to which time in England the only medical examiners were the bishops of the several dioceses who thus possessed the cure of the body as well as the soul. Consequently, as may be anticipated, the country swarmed with empirics. Ignorance, however, dies hard, especially where no railways diffuse knowledge from the centre to the circumference of a country as the following shows.

Carew in his survey of Cornwall says, "Rawe Hayes, a blacksmith, and furnished with no more learning than is suitable to such a calling, who yet ministered with so often success and general applause, that not only the home-bred multitude believed so mainly in him, but even persons of the better calling resorted to him from the remote parts of the realm to make tryall of his cunning by the hazard of their lives, and sundry upon guot cause or to cloke their own folly reported that they had reaped their errand's ends at his hands ; he flourished 1602."

The scarcity of medical practitioners of that time may be gathered from what follows from Fuller's "Worthies of England," 1662. Speaking of Cheshire he says, "If this county hath bred no physicians, the wonder is the less if it be true what I read, that if any here be sick they make him a posset and tye a kerchief on his head, and if that will not mend him, then God be merciful to him." But be this understood of the *common* people, the gentry have the help no doubt of the learned of the profession. England had hitherto wanted

that protection which only a rational encouragement could afford, consequently we find that our continental neighbours were at that time in considerable advance of us, in fact we could scarcely point to an authority at home. Whatever the value of religion may be at the present (and I believe it to be great) there is ample proof that the darker ages found science over-weighted by priestly ignorance, that looked upon freethought as something satanic, and as the apple of discord that first brought sin into the world. To the classic age of Augustus we are indebted for a pattern of that enforced law that since 1858 has given so much encouragement to all the branches of the healing art. We find that Augustus Cæsar made this law:—“That no person, of whatsoever estate or degree, should practise or teach physic, undertaking the cure of any sick persons, unless he were first licensed and authorised by the emperor himself, or by such as should by him be deputed or appointed for that purpose,” and this law was kept by the succeeding Cæsars. Vandalism, as we know, extinguished the law, but to the honour of Rome, the Augustan law was first again enforced there when Lotharius was crowned emperor. The thoughts and practice concerning dentistry about this time (beginning of Seventeenth Century) may be gathered from the writings of Riverius, Professor of the University of Montpellier, whose works were afterwards translated into English by the Astrologer Culpeper. He believed that the teeth were organs of taste with the tongue. Like Hunter, too, he avers that the substance of the teeth were endowed with sensation. Of bones, he says, “The teeth only are partakers of the tender nerves of the brain, and for that cause alone do they manifestly feel. Therefore, pain reacheth not only to the nerves and inward membranes, but also through the substance of them. Quoting Varioli (whose work on the brain has made his name remembered in the Pons Varolii, called after him) he says, “the reports of one who had his tooth pulled out without iron or force, but with the fingers, and yet bled a pint at one time, and so much the next day.

“Now this flux of blood is stopt by laying a piece of lint like a ball and holding it down for an hour or two with the fingers. If that will not prevail, apply burnt vitriol and lay a rag upon it dipt in vinegar and compress with the finger till you make an eschar.”

Valerius, a contemporary, poured vitriol into the cavity for hæmorrhage. He says, “a certain virgin, dwelling in a neighbouring village being tormented of the toothache which she thought to be

caused by one of her grinders which was rotten, she sent for the surgeon to draw it out, but he plucked out the next tooth a sound one, but suddenly perceiving his error he drew out the rotten one and soon after—having washed the hole of the former tooth with wine—he thrust the sound one back into its place again, and after a regimen of soft food with astringent wash, the tooth fastened again as firmly as before.”

Scultetus of Ulm, about this time, published his “*Armamentarium Chirurgicam*,” or I should rather say his work appeared about this time for he died before the work was published (1645). The uses and method of application of the dental instruments he advises will be better understood by a translation which I will now give from the Latin works of Antony Nuck, the celebrated Dutch professor, who in the latter part of this century was professor of surgery at the University of Leyden. He says “That the extraction of the teeth may succeed, happily these rules are appointed for him who would operate.

“That he have a knowledge of the alveoli is absolutely necessary as we may presume. For inasmuch as a great difference is marked among the teeth, so in like manner there exists differences in their alveoli. The smallest which have single roots are called incisors. Those with the longest roots, eye teeth, because they are near the eyes. The largest size teeth are called molars and they have two, three or even four roots.

“Now the proper use of these instruments (described by Scultus) I have never seen explained so proceed to do so.

“For the proper exercise of this operation various instruments are necessary—some for the canine teeth and incisors, others for molars and spiculæ, finally others for taking out fractured teeth and fragments.

“The following table comprises the most valuable in use :—

- “1. *Pedes Caprini*—(Goat’s foot—*Pied de biche*), &c.
- “2. *Rostrum Corvinum*—(Raven’s beak forcep).
- “3. *Forcipes dentariæ* (various tooth forceps, *Pincettes et Daviers*).
- “4. *Pelicanus*—(the Pelican).
- “5. *Dentiscalpium*—(the tooth lancet).
- “6. *Trulla*—(a Spitoon).

“Before, however, extraction is determined on, diagnose whether the tooth may be better left to loosen or to be consumed by caries,

for we ought rather to well weigh whether we can or whether we ought to extract. For it should be remembered, that the surgeon may be disgraced and procure little fame for mistakes, nor will he, unless the operation be carried through most successfully, get the least praise, and particularly should this be remembered when the nobility, gentry and more delicate ladies favour you with a call. Moreover, dangerous and troublesome symptoms may occur or hæmorrhage may supervene from the cavity as indeed often occurs. Styptic medicaments, therefore, should always be at hand. I am accustomed to use linen cloth moistened with lemon juice or"—here follow several recipes. "If however, these methods fail to stay the hæmorrhage we must fly to the cautery.

"Now, to perform the operation in a proper manner the gums should be well separated from the teeth (never, however, if the patient be scorbutic or consumptive), because some people's gums grow so firmly to the teeth, that they become torn. Now, if you desire to force out one of the centrals use the 'pede caprino.' The eye teeth are extracted with the 'forcipe denteria'—however, where decay has made a deep hold on it, it is accomplished most happily with the pelican. The anterior molars are better extracted with the same instrument with curved arms. Broken teeth are best extracted with the 'rostrum corvinum.'

"The teeth of women big with child should never or very rarely be extracted, especially the eye teeth, because by so doing the eyes of the fœtus may be afflicted with some blemish. Sometimes, again, the teeth may protrude without the row or may grow obliquely inside or out. Such prominences may be corrected with a file—not more however than can be borne or you may produce a rotten tooth to offend the sight or an intolerable toothache may arise such as may torture the person exceedingly and drive away your patient. The same troubles usually supervene where the 'forcipe incisorii' is used in such operation." *(To be continued.)*

THE IMPORTANCE OF A THOROUGH MECHANICAL TRAINING.

An Introductory Lecture in Dental Mechanics delivered at the Dental Hospital of London.

By DAVID HEPBURN, L.D.S.Eng.

"GENTLEMEN,—We are met here this evening to commence our course of lectures on Dental Mechanics, and it is almost needless for

me to remind you that in a department of your work so essentially practical in its nature as this, it is impossible for me to bring before you all the details of the various processes which pertain to the construction of artificial dentures. I must rather address myself to you as gentlemen who are already acquainted with many of these details, learned I trust, during your apprenticeship, and endeavour to select for your consideration those points which are least likely to have come under your notice in the routine work of the dental laboratory.

"I must not, however, allow this opportunity to pass by without saying one word on the great importance of this branch of your work. Much has been done of late years towards the preservation of the natural organs of mastication, but notwithstanding the advances of conservative dental surgery, there is a wide field left open in the department of prosthetic dentistry. Indeed, when we look around and note the increasing deterioration of the teeth and the universally acknowledged importance of the possession of masticating power, and feel, as we cannot fail to do, that with the poor material we have to work upon, our conservative operations must, in a large majority of cases, in time fail, we are justified in concluding that the services of the dental posthetist will be as greatly in demand in the future as they ever have been in the past. It therefore behoves us to cultivate this branch of our professional work with all assiduity.

"To cultivate it efficiently and intelligently, there is but one way open, and that is by diligent and constant application at the "bench." Nothing short of a period of intimate everyday hand-to-hand association with the practical details of dental mechanics as they come before us in the workroom will avail anything towards the acquirement of that necessary amount of knowledge which can lighten the difficulties of our so called "mechanical cases," when we begin to deal with them in the operating room.

"Theory without practical knowledge in most departments of work is a dangerous thing, but I think this especially applies to dental mechanics which never can, from the varying nature of the oral structures, be an exact art, and the practitioner who has neglected practical work in the workroom and relies upon theoretical knowledge gained from books or upon his own fancied ingenuity, will be constantly creating difficulties for himself and his patients by endeavouring to carry out in practice ideas which appear theoretically

good but which are practical impossibilities. Earnest attention to this special branch of your professional studies will aid you also in another way, for it will help you to a better performance of your surgical operations. The hand of the dental surgeon must undergo training in some form or another so that it may gain that power, flexibility, dexterity and delicacy of touch which are essential elements for the proper handling of the various instruments employed in oral operations. The attainment of manipulative skill with the dental surgeon is an absolute necessity, and this skill should not be attained at the expense of the patient, but should be acquired, at any rate to a certain extent, before the student begins to handle the living subject. What better preparation for this dexterity can we find than the work which is, or should be, involved in the three years' apprenticeship in mechanics required by the curriculum of the Royal College of Surgeons?

"I cannot too strongly impress upon you the importance of this hand-training, for whether it be in taking impressions of the mouth, in inserting dentures, or in any of the varied operations of dental surgery, it matters not, but of this you may rest assured that a firm, yet delicate touch will tend more to establish confidence on the part of your patients than any amount of rhetorical argument.

"Further, in acquiring an intimate and practical knowledge of dental mechanics, you will, so to speak, be able to command your own workrooms. However skilful may be the assistant (if you be in a position to employ one), it must be borne in mind that he alone who has modelled the mouth and has studied the oral conditions and idiosyncrasies of the patient is able to direct the construction of the denture.

"The study of the model alone will never suffice for this. It therefore behoves every dental student to master in a really practical manner all the details of the various methods of accurately constructing dentures, and what is quite as important, the modifications requisite in certain cases, so that in designing the work he may not demand impossibilities from those who have to execute it.

"There is little rule or routine in the science of dental mechanics, except in its broad principles. Every case differs and must be treated according to its merits. Practice alone therefore teaches us what is requisite when difficulties present themselves and how these difficulties may best be overcome. Each individual case must be undertaken in the artist spirit. It must be entered into heartily

for the work's sake and carefully considered in all its bearings. In the mind's eye every step in construction must be followed out, these weighed side by side with the oral conditions and temperament of the patient, and this can only be done with hope of the attainment of a satisfactory result by the student who has devoted himself conscientiously to the study of this special branch of his profession.

"One more word on this subject; you must remember that there may come a time for all of us when the strain of the more intricate dental operations becomes too exacting and we are glad to turn with relief to those cases which we call our "mechanical" ones. Our patients have advanced in years with us, and despite our endeavours to *save* teeth the ravages of nature need to be supplemented by art. Let me emphatically assert, that no relief from anxiety and strain will be experienced in the treatment of these cases by dental surgeons who have not attained proficiency in dental mechanics in the days of their youth, for it appears to me that just as in the mastery of a musical instrument, proficiency in this branch of dentistry must be acquired early in life."

After describing the anatomy of the finger tips and showing that the sense of "touch" could be developed and not destroyed by a not too prolonged course of manipulative work in the dental laboratory, the lecturer proceeded to explain those points in the anatomy of the maxillary bones, temporo-maxillary articulation, actions of the muscles of mastication and structure of the tongue and palate, which bore special reference to the subject in hand, and dwelt at some length on the sense of taste and the actions of the pillars of the fauces, pharyngeal muscles and soft palate during the act of deglutition. He next referred to the pathological conditions associated with morbid states of the mucous membrane and subjacent structures, and insisted upon the necessity of inducing a healthy condition before attempting to insert any mechanical appliance. The rugæ of the palate and their distribution were explained, and all those points such as the papilla corresponding with the anterior palatine fossa, the frænum of the lip and tongue, the eminence of the base of the malar process of the superior maxillary bone and various reflexions of mucous membrane which it was desirable to guard from pressure, were pointed out. The changes occurring from absorption after loss of teeth and alterations in the jaws through age were illustrated by diagrams. After referring to the study of facial expression and the various forms and colours of teeth associated with diverse types and

temperaments, the lecture terminated with a description of those points which should be considered in the preparation of the mouth for artificial teeth and the time for insertion of temporary and permanent plates.

Reports.

THE STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

THE last ordinary general meeting was held on October 14th, 1889, Mr. WILLIAM HERN, President, in the chair. The minutes of the previous meeting were read and confirmed.

Messrs. Allin, Barkley, Braine, Coysh, Gardner, Goddard, Hall, Jones and Leigh, were balloted for and duly elected members of the society.

The following gentlemen were proposed by Mr. HARSART, seconded by Mr. PREEDY, for the membership of the society :—Messrs. F. J. Armitage, Balding, A. Barnes, E. J. Blain, A. T. Burt, C. F. Carter, B. A. Castello, G. Dalton, Dewhurst, R. W. Gracey, W. E. Harrison, H. F. Humphreys, J. Keckwick, F. Ladmore, E. A. Mansell, W. H. Morgan, W. J. Pike, A. S. Pearse, W. J. Roberts, F. Rooke, A. G. Spiers, H. P. Spurr, W. B. Sansom, H. W. Taylor, Waller, C. H. Watson.

The PRESIDENT announced that Dr. Dudley Buxton had presented the society with a copy of his pamphlet on "Recent Researches upon Nitrous Oxide Narcosis." He further gave notice, according to Rule XV., that at the next meeting he would move :—That Rule XXII. be so altered that the sentence "The chair to be taken at 7 o'clock p.m., and the meeting to be adjourned at 8.30," may read "The chair to be taken at 8 o'clock p.m., and the meeting to be adjourned at 9.30." Also that the Rule XXIII. shall read :—"That at the meeting preceding the Annual General Meeting, the President shall announce the list of officers and councillors proposed by the council for the ensuing year, and shall ask if any member wishes to propose further names. These names, if seconded, shall be printed with those proposed by the council in the balloting lists, which shall be posted in the hospital, and sent by post to all honorary members residing in the United Kingdom, together with notice of the Annual General Meeting."

Casual Communications being called for, Mr. SEYMOUR, of Folkestone, presented a model of the lower teeth showing five incisors.

Mr. WOOLF presented a model of the upper teeth showing three supernumerary teeth—two being in the place of the left central (which had been removed), the third being behind the right lateral. Also a model showing an epulis which had been twice removed but had recurred; after taking the impression, the canine and both bicuspid were extracted, the epulis removed, and the margins of the alveolus pared. Also a model showing hyperostosis of the alveolar ridge after removal of the teeth; this was increasing at about the rate of one-eighth of an inch in twelve months. The teeth had been exostosed. Also one showing an odontocyst.

The PRESIDENT and Mr. DOLAMORE mentioned cases of hypertrophy of gums.

Mr. OLIVER presented an upper model taken from a girl, æt. 18, showing congenital absence of the four upper bicuspid; the canines were separated from the incisors by a space; nothing peculiar was observable about the hair.

Mr. VANDERPANT presented some petrified sharks' teeth.

Mr. PREEDY presented a model showing a central incisor of great width. It was not a case of gemination, as the other teeth were present.

Mr. PORTER showed a tooth which gave rise to some discussion. Patient came to the hospital in July, having had a good deal of pain. The nerve was dead. The canals were cleansed and dressed, and in a week's time they were filled and the cavity plugged with amalgam. Patient returned October 12th, never having been free from pain and tenderness. The filling was removed, and on passing up a probe distinct pain was caused. It was thought to be a case of perforation, but on removing the tooth it was found not to be so, but that the root was considerably exostosed.

Mr. RILOT pointed out that when pain was caused by passing a probe up a root, it was usually considered to be due to one of three things—the root was perforated, the apex patent, or a portion of nerve remained alive. But he had found that all these might be absent, and yet sometimes there was a spot, pressure on which caused pain, this he believed to be due to the sensation being conducted to a hypersensitive periosteum.

The PRESIDENT stated that in his opinion the shock was often due to an impulse transmitted by the column of air or fluid through

the apical foramen. That it is so transmitted is shown by pumping ink into the pulp chamber with an instrument, when the ink would be seen to pass through the apical foramen, even when this was so small as not to have been previously discoverable. This taught the lesson that we should never, especially in putrid teeth, force up instruments with wool wrapped round them, in other words, avoid piston action.

The PRESIDENT showed a pair of forceps for lower stumps, having a thumb rest close to the hinge, this enabling great downward pressure to be applied more over the place it was most needed than could be done without it.

Mr. READING presented an upper model showing four well formed bicuspid on one side and two on the other. He stated that there was a supernumerary tooth in the lower jaw.

To show the foolishness of taking the distance the probe passed up a root, as a guide to being or not being through the apex, Mr. RILOT presented two bicuspid, a long one and a short one, which he said clearly demonstrated the "long and the short of the matter."

The PRESIDENT then called on Mr. OLIVER for his paper on

ANÆSTHETICS.

After briefly pointing out the large share dentists have taken in the discovery and introduction of anæsthetics, he went on to discuss the physiological action of anæsthetics in general. Anæsthesia consists essentially of paralysis of the higher centres of the brain. It has been found by experiment that the germination of seeds may be arrested by the action of anæsthetics. The centres of the brain are affected by the anæsthetic in a different degree, the most highly differentiated being the first to fall under its influence. As the progress of anæsthesia continues the others also cease to act until we get nothing remaining in action but the respiratory and cardiac centres. If the administration be continued these also are paralysed and death ensues. But if this last stage be not arrived at the centres will recover their powers in exactly the reverse order in which they lost them. The anæsthetic of more particular interest to dental surgeons is nitrous oxide. This gas should be administered pure and free from air, the apparatus necessary being an inhaler connected with an india-rubber bag into which the gas is driven. Some people advocate the use of a supplemental bag, which they claim to be more economical and produces longer anæsthesia, the disadvantages being

that it is liable to produce headache and takes longer to get the patient off. Before giving the gas the patient's mouth should be examined to see that there are no loose parts, artificial teeth, &c., which would be in danger of being swallowed during the administration. Precaution should also be taken to loosen any tight collars or belts, so as to give every opportunity for free and easy respiration. The patient's mouth being kept open by a gag placed in a suitable position, the face-piece is applied, anæsthesia is complete within 80 seconds after the commencement of the administration and usually lasts 30 seconds. Absence of sensitiveness of cornea to touch and stertor are the most reliable signs that this stage is reached.

Nitrous oxide exercises but a slight depressing action on the heart. In animals, killed by it, the heart was found beating after respiration had ceased. Its physiological action is not quite clear. By some it is held to act by producing partial asphyxia, but that it must also have some special effect on the nerve centres analogous to chloroform and ether seems to be proved by Dr. Hewitt's experiments, who, on administering a mixture of nitrous oxide and O, found that he got deep anæsthesia without loss of colour and stertor attending the use of nitrous oxide alone. The following advantages over nitrous oxide are claimed for the mixture.

- (a.) More pleasant to inhale.
- (b.) Absence of lividity and stertor.
- (c.) Longer anæsthesia.
- (d.) Absolutely safe.
- (e.) No unpleasant after-effects.

In the absence of stertor and other signs of nitrous oxide anæsthesia, it is very difficult in giving the mixture to know when to remove the face-piece. The most reliable signs appear to be: relaxation of the extremities and calm respiration. The cases in which the mixture seems to be more especially indicated are those in which the functions of the heart and lungs are severely impaired and where it is desirable to throw as little extra strain as possible on these organs.

The chief dangers of nitrous oxide administration are due to foreign bodies, such as stumps dropping into the back of the mouth and being sucked into the larynx by a sudden inspiration. To guard against such an accident, the operator should be careful that each stump is removed from the mouth before the extraction of another is attempted.

In some cases the breathing becomes shallow during the later part of the administration and may cease ; but artificial respiration if resorted to at once will always be successful in reviving the patient.

If a longer period of anæsthesia than that obtained by nitrous oxide be required ether may be used subsequently. This method spares the patient the disagreeable smell and taste which accompany the use of ether alone. In using ether it is most important to watch the breathing which may stop suddenly. This fortunately happens some seconds before the heart ceases to beat, so that artificial respiration may be resorted to with every chance of success. In some cases on account of the irritating effect which ether has on the larynx it cannot be used, under the circumstances we must fall back on chloroform or one of the anæsthetic mixtures. The chief objection to chloroform is that it has a depressing action on the heart, and is therefore liable to produce syncope. Careful attention must therefore be paid to the state of the pulse and on its showing signs of failure the administration must be stopped. Should this accident occur the patient must be placed with the head at a lower level than the feet, artificial respiration being also kept up. The dangers attendant on the use of chloroform have suggested the use of various mixtures in the hope of diminishing the perils of anæsthesia from that agent. The ACE mixture, consisting of one of alcohol, two of chloroform and two of ether has been largely used. The advantages connected with its use being a more perfectly sustained action of the heart and respiratory centre. The disadvantages are an irregular rate of evaporation, so that the percentage of chloroform vapour is never quite certain. The occurrence of several fatal cases under the use of these mixtures is a sufficient demonstration that they are not devoid of danger.

DISCUSSION.

Mr. SEYMOUR, in opening the discussion, remarked that he would like to have heard the writer compare the methods of giving gas from the bottle and from the gasometer respectively. He wished to impress on his hearers the importance of having a medical man present to administer the anæsthetic. He considered it almost dishonest for one man to attempt both to give gas and to perform the operation. It was a great failing in the law that dentists were not legally entitled to administer gas. He also quoted several authorities in support of his remarks.

Dr. DUDLEY BUXTON mentioned that there was no law preventing

any man giving gas to another. It was the custom of some dentists to employ their assistants, or even their servants, for this purpose. It was very important to have a free expiration valve to the face-piece, so as to avoid giving a mixture of nitrous oxide gas and asphyxia. To ensure a patient taking good breaths, he found the best way was to tell him to blow out. The expiration was sure to be followed by a full inspiration. If the patient be told in the first instance to take a deep inspiration, he frequently did so, and then held his breath, the result being a feeling of suffocation. He did not consider the loss of the corneal reflex to be a good sign that the patient was "off." Better than that were the commencing jactitation of the muscles, especially of the orbicularis palpebrarum and the face, and true laryngeal stertor. He drew attention to the fact that M. Paul Bert was the first to employ a mixture of nitrous oxide and oxygen. The best way to treat syncope due to deficiency of blood in the heart was by total inversion. This did not hold good in cases of asphyxial syncope when the heart was surcharged with blood. The administration of ether at the present day did not take so long as chloroform—ether taking two and chloroform five to eight minutes.

After a few remarks from the PRESIDENT, Mr. OLIVER replied.

The PRESIDENT then tendered a vote of thanks to Mr. Oliver and to the gentlemen who had brought forward *Casual Communications*, and announced the date of next meeting as November 11th. The proceedings then terminated.

STUDENTS' SOCIETY, NATIONAL DENTAL HOSPITAL.

THE last ordinary monthly meeting of this Society, was held on Friday, October 11th, 1889, at eight o'clock, Mr. SIDNEY SPOKES, President in the chair.

The minutes of the previous meeting were read and confirmed. Mr. Hemstead was present as a visitor.

The names of the following gentlemen were given out as being nominated for election at the next meeting :—Messrs. Andrews, Hemstead, and Smith.

Mr. FRED. T. HAYCROFT, owing to his leaving the hospital, tendered his resignation of the treasurership. It was accepted ; and a vote of thanks was accorded him for his past services to which he replied.

Mr. ARNOLD PRAGER was proposed and seconded by Messrs. DUNLOP and FARO as Mr. Haycroft's successor. This was carried unanimously and replied to by Mr. Prager.

A sub-committee was appointed for the purpose of making additions to the Library.

Casual Communications:—The following gentlemen showed cases of interest, Messrs. E. A. H. FIELD, HAYCROFT, FARO and ARNOLD PRAGER.

The PRESIDENT then called upon Mr. Humby for his "Notes on Some Cases in Practice," which he had at a very short notice (in consequence of the gentleman who was to have read a paper being unable to attend) kindly undertaken to read. They were most interesting and included the following:—

- (1.) A case of retained temporary incisor.
- (2.) A non-erupted lower bicuspid.
- (3.) Two specimens of split teeth (molar and bicuspid ; both had been filled).
- (4.) A matrix and engine mallet (right angled) for use in filling incisor teeth from the lingual surface
- (5.) A case of perforation of both hard and soft palates.
- (6.) Crowning a canine stump for a deaf patient, who used an audiphone, and made use of stump in question to hold instrument in place.

Mr. HUMBY was accorded a hearty vote of thanks for his kindness in bringing these cases forward, and after the usual discussion the meeting adjourned till Friday, Novembet 1st, when Mr. T. G. READ will read a paper on "Crowning and some Useful and Practical Hints."

ARNOLD PRAGER, *Hon. Sec.*

EXTRACTS.

NEGLECTED ADVANTAGES.*

By ALBERT H. BROCKWAY, M.D.S.

No fact seems to be more generally admitted than that the present is an age of improvement. The triumphs of steam and electricity, whereby our ready communication and exchange are so vastly promoted, are fitly supplemented by the growth of more enlightened and liberal views in science, ethics, and religion, softening and

* A Paper read before the New York Odontological Society.

broadening in their influence, and steadily tending to bring in peace and good-will among men. The laws of sanitary science are inquired into with a zeal born of enthusiasm, that the "pestilence that walketh in darkness and wasteth at noon-day" may be stayed. The reform in political methods is undertaken and carried forward by earnest and unselfish men to the end that good government and wise policy be promoted, and justice and prosperity prevail.

But no observant person can fail to be struck with the fact that, after all, the acceptance of new ideas and new methods is of really slow growth, limited at first to a few receptive minds; that the mass of mankind are not easily changed from the habits and methods to which they have become accustomed. To them appears as the highest wisdom the smug and satisfied philosophy embodied in the couplet:

"Be not the first by whom the new is tried,
Nor yet the last to lay the old aside."

forgetful that were it adopted by *all* there would be an end of progress.

Reflection upon this phase of the subject has led me to better understand what I confess has sometimes surprised me in the attitude held by so many in our own chosen profession, which is but an epitome and microcosm of the larger world.

That the improvements made within the past few years in the practice of dentistry—especially in the appliances used—have been very great, all will admit. We are, indeed, apt to think of our progress as phenomenal and exceeding that in most other branches of human activity, which is perhaps in consequence of our nearer view. Be that as it may, the fact remains that we have at our command in the present day many advantages in the conduct of our beneficent work not possessed or scarcely even dreamed of by our fathers—advantages which, if not neglected, but rightly employed, are capable of increasing our capacity and consequent usefulness to those under our care to a most marked degree. The statement does not readily admit of illustration by statistics, so much of the purely personal element is to be taken into the account, or I should be tempted to undertake it. I can only say, in passing, that in my individual experience as demonstrated by my recorded operations the benefit derived has been sufficient to more than double my capacity for work.

That many of these advantages are neglected by not a few among

us, to their own and their patients' detriment, is to me therefore a matter of regret, and I shall endeavour in the short time at my disposal to designate a few of the more prominent improvements, and comment briefly upon their value, in the hope that thereby they may be more generally appreciated and made use of.

Not undertaking to indicate the order of importance, I shall speak of the assistant, the burring engine, the matrix, and the separator.

And first of the assistant at the chair. There is, I am aware, in the minds of many dentists, a prejudice against the employment or presence even of another person at the operating chair,—a prejudice which I confess I myself once shared, but which experience has shown to be unfounded and absurd to the last degree. They fancy that the presence of another will in a measure interfere with the somewhat personal and confidential relation which the dentist should hold toward his patient, and that fastidious patients might object to their employment. Granting the objection its full weight, I am convinced that it should not be for a moment considered in view of the advantages which can be set against it. To the operator aided by a trained and intelligent assistant is given another pair of hands—and sometimes we fancy that Briareus with his hundred arms would have too few for the emergency!—another pair of eyes to look for the elusive and particular instrument required, two willing feet to fetch the needed article just out of reach, and another brain to take thought of the order and care of the surroundings. To the patient is given the service of one less preoccupied than the principal, to see to his needs, look after his comfort, and help in a hundred nameless ways to shorten the tedium and fatigue of the dreaded sitting.

Objection is sometimes made to the employment of an assistant on the ground of expense, many declaring that they cannot afford it, seeming to regard it in the nature of a needless luxury; and I have, in advocating this advantage, not infrequently been asked what use I could find for an assistant aside from malleting.

The objection of expense can be urged against the employment of any means of improvement; but expense is relative, and what seems needless extravagance may in fact be the wisest economy. No one, however limited his practice, can afford to forego the advantage of an assistant; on the contrary, the increased efficiency and celerity which he thereby secures—to say nothing of the added comfort

which is insured to his patient—will repay tenfold the probable expense incurred.

A word as to what kind of assistant. Having tried them of both kinds, I give the preference to those of the gentler sex, as being, all things considered, better adapted by nature to fill the office ; and to illustrate, I will mention some of the services rendered me by the young lady who has for some time past been associated with me in this capacity.

In the first place, she looks to the general condition of the fixtures of the office after the servants have properly swept and dusted, to see that everything is in proper order for the reception of patients ; she keeps in condition the instruments and appliances used, bringing them to me as wanted and returning them to place when done with ; she prepares in advance all articles that may be needed, such as absorbent paper, pellets, waxed ligatures for adjusting the rubber-dam, swabs for dressing root-canals ; she assists in putting on the rubber-dam, or in using the separator or matrix ; she holds away the lips or the tongue of the patient when needed, to avoid abrasion or secure a better view ; prepares ready to my hand the materials for filling, and assists in packing them into the cavity, and renders a thousand and one little services to the saving of my time and strength and the preservation of my good temper that time would fail me to enumerate.

The number among us who fail to make use of the burring-engine in some measure is perhaps too small to be seriously considered, yet I am of opinion that not a few fail to get from it all the advantage which they might. The operator who wastes his strength and sacrifices in some degree his steadiness of touch by driving his own engine, standing on one leg, stands no less in his own light. This matter should be delegated to an assistant, or, better still, some motor power should be employed for the purpose. There can be little excuse at the present day for not doing so. I have in my own practice for several years made use of a water motor, put in at an expense of about one hundred dollars, and costing me in taxes some eight dollars yearly, which I am confident has been a most profitable investment. The steadiness of the bur when driven by a uniform power makes its use less painful than when driven in the usual way by the treadle, besides the operator and assistant are left free to give their attention to other matters. But great as is the advantage secured by the burring engine in the preparation of ordinary and

accessible cavities, in reaching those upon the posterior surfaces of teeth far back in the mouth it is *indispensable*, if time and the feelings of the patient are to be taken into account. By the aid of the corundum-stone and the back-action hand-piece, such cavities can be readily exposed and prepared with nearly as much facility as any ; while with the help of a suitable *matrix* the introduction of a proper filling is rendered far less difficult and uncertain than would otherwise be possible.

It is in such cases as these, and in those more accessible teeth where considerable loss of substance has taken place, that I find most use for the matrix in some form ; and while I do not myself make use of it in filling many approximal cavities in the molars and bicuspid, I have been surprised to hear, within a short time past, two deservedly prominent dentists admit that they had never even *tried* such an appliance. However, I am satisfied that the matrix is too useful to be wholly discarded, though less a necessity than some other things.

The separator, as introduced in its crude form by the late Dr. Jarvis and modified by Dr. Perry and Dr. Bogue, also the forms devised by Dr. Parr, Dr. Elliott, and others, has met with a less universal acceptance than its great merit demands. It is one of the most useful devices for saving time, both to the operator and patient, that has been introduced. Nor is time alone saved, but pain and discomfort as well. By its employment not only are the teeth separated quickly without serious discomfort, but being also thereby held firmly in the changed position their sensibility is greatly reduced, as every one familiar with the use of this instrument has doubtless observed. I am aware that many quite progressive dentists have not yet availed themselves of the manifest advantage of the separator from fear that injury might be done by its use, or that it would provoke protests from their patients. This objection might be urged against almost any instrument we have, and with about as much force. I have never known of harm done by its use, while we are all familiar with cases where serious mischief has been wrought through the careless separation of teeth by the ordinary methods with wedges of rubber, wood, or cotton.

It is true that the sensation caused by the application of the separator is at the first somewhat unpleasant, possibly painful ; but it is only momentary, and patients after experience with it almost universally express their preference for it over other means. The time saved by its use is no small item.

To apply it will take, let us say, at a liberal estimate, perhaps five minutes in the most difficult cases, and of course much less usually. By the ordinary method of separation nearly as much time will be consumed in getting the patient into the chair and introducing a wedge of cotton or rubber, which not infrequently will require one or more renewals before sufficient space is gained, each renewal taking a few moments of the dentist's time and involving another visit on the part of the patient. In a full practice the aggregate waste of time is a serious loss.

But as I did not set out to cover the whole field of neglected advantages, I will not further continue. In what has been said, my desire has been to impress upon such of my professional brethren as have for any reason failed to fully appreciate the benefits of the appliances mentioned my own belief in their value, and to ask them seriously to consider whether they can afford to forego any advantages of this nature which are within their reach. If any shall be aided in this by what has been said, I shall feel that I have not spoken in vain.—*The Dental Cosmos*.

NOTES OF A CASE OF SCLEROTITIS APPARENTLY OF DENTAL ORIGIN.

Read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association, held in Leeds, August, 1889.

By JOHN HERN, M.D.Edin., M.R.C.S.Eng.,

Ophthalmic Surgeon Darlington Hospital.

It was with considerable reluctance that I decided to bring a single case before the members of this section, but ultimately resolved to do so, thinking it probable that other cases of the kind have been met with, though, so far as I can ascertain, not published. My attention was drawn to the dental organs as a reflex cause of ophthalmic affections by an excellent paper read before the Odontological Society* (and published in its reports), by Mr. Power; but it is evident from it that sclerotitis has not been noticed by him as one of the affections of probable dental origin.

Mrs. Y., aged 38, a healthy, well-developed woman, the mother of three healthy children; no history or other signs or symptoms of syphilis or rheumatism, or any other morbid constitutional tendency. The husband and relations are also well known to me, and have no particular constitutional tendency to disease.

* Odontological Society's *Transactions*, vol. xvi., page 11.

On March 27th, 1888, Mrs. Y., consulted me for a severe pain referred to the point of emergence of the left infra-orbital branch of the superior maxillary division of the fifth, and shooting up over the nasal bone ; this pain came on in paroxysms several times during the day, and, as the patient described it, "inflamed her eye." On examining the left eye, tension seemed slightly above the normal, but, on comparing it with the right, they were found to be as nearly as possible the same ; the eye was not tender to the touch, but at the upper margin of the cornea, about two lines external to the vertical meridian, a distinct patch of scleritis was observed, the contiguous corneal substance being quite hazy in its superficial layers. The patch at this time was about the size of the flat surface of a split pea. Although six-grain doses of quinine several times a day relieved the pain, the patch gradually spread outwards and downwards along the corneal margin, involving its superficial layers almost to the pupillary margin. I noticed the patch spread and enlarged most on those days when the patient complained of most pain referred to the infra-orbital region.

In August, 1888, my notes of the case read as follows :—
"Sclerotic patch has spread from the vertical meridian above to four lines internal to vertical meridian below, and has also extended two lines nearer the posterior pole than when first seen five months ago. Tension plus $\frac{1}{2}$ to 1 L. Pain now referred to all three divisions of the fifth (supra-orbital, infra-orbital, and the mental branch of the inferior dental) ; also pain in the upper and lower teeth of left side, especially the former. Patient complains that on taking anything, either hot or cold, into the mouth, the teeth ache (especially the left uppers), and that pains shoot up into the left eye."

The condition of the eye became gradually worse until late in the following month (September). There being an increase in the pain referred to the teeth, I asked my brother, William Hern, who was spending his holiday with me, to see the case, which he accordingly did, and discovered an exposed nerve in the second left upper bicuspid, and at once advised its removal, considering it the probable cause of the pain. The vision of the left eye was carefully tested late in September, and found to be $\frac{20}{30}$ L. Tension + 1 L.

On October 5th, the tooth was extracted, and sent direct to my brother for a report on its *post-mortem* condition, which I will give in his own words :—"Upper second bicuspid of left side affected with a very large and deep carious cavity on its anterior surface,

involving the pulp chamber, and a smaller and shallower one on its posterior surface. On splitting, the pulp was found to have been alive, its free surface ulcerating and covered with thin greenish pus, its deeper parts intensely red and injected; the pulp tissue altogether being in a state of great irritation, and a potential cause of much pain, both local and reflex." He also says:—"I have seen several cases amongst my patients at the Dental and Middlesex Hospitals of undoubted reflex ophthalmic disturbance due to dental causes, in which the lesion was less clearly marked than in this case. In a few cases which have been sent me from Moorfields or from the out-patient ophthalmic department of my own hospital, an exposed pulp in some lurking position has most commonly been found to be the irritating cause."

As to the progress of the case after the extraction of the tooth, the pain disappeared immediately and did not recur. For a fortnight the condition of the eye appeared to remain absolutely stationary, and then gradually the lesion gave in, and disappeared in from six to eight weeks, leaving a slight haziness of the cornea, with the usual thinning of the sclerotic, giving the blue coloration of the choroidal pigment over the seat of the sclerotic patch. Tension in L. became equal to that of the R., and sight returned to the extent of $\frac{28}{30}$.

Having given a fair trial to all the recognised methods of treatment before the extraction of the tooth, I at that time ceased to administer all internal remedies, and simply applied a solution of boracic acid locally. Although the *post quod ergo propter quod* is not a safe method of reasoning, yet the gradual spreading of the patch up to the time of the extraction of the tooth, the sudden check produced thereby, the gradual diminution, dating from a fortnight after the extraction, and, finally, the gradual return of the eye to its normal condition, point, I think, to the probability that in this case, at any rate, we have an example of an irritative lesion reflexly produced, in which the afferent nerve is the superior maxillary, or second division of the fifth nerve, and the efferent nerve the first division of the fifth and probably its nasal branch.—*British Medical Journal*.

FATAL CASE OF NITROUS OXIDE ANÆSTHESIA.

The following account is furnished to the *Journal of the British Dental Association* by Mr. G. W. Watson, L.D.S. Edin. Lady Milne

called on me on September 28th, with a note from Dr. McBride, whom she had consulted with regard to a discharge of pus from left nostril of a year's standing. Dr. McBride had examined the patient, and came to the conclusion that it was a case of disease of the antrum, and sent her on to me for treatment. I found on examination the second left upper molar abscessed and very painful on pressure, the outer alveolar wall over roots of tooth was also swollen and painful. I informed her ladyship that I would require to remove this tooth, and also the third left upper molar which was not in a good condition either, and that an opening would require to be made into the antrum through the socket of one of the teeth.

I proposed that Lady Milne should take nitrous oxide gas for the operation, which is the anæsthetic I have always employed. She agreed to this, and asked if she was required to bring her medical attendant with her ; I replied, " Do so by all means, though it is not absolutely necessary to do so." Lady Milne mentioned also that she had a weak heart, but I thought nothing of this, as it is a common expression for patients to use, and meaning as a general rule very little. I made an appointment with Lady Milne for October 1st, at twelve o'clock. Punctually to the time she came, accompanied by her husband and daughter. Patient was stout, somewhat pale and flabby-looking, her age owing to the manner of dressing I took to be about sixty, but I found afterwards she was seventy-one. On being seated in the chair, I asked patient when she had breakfasted. She replied nine o'clock. The upper part of dress having being undone I proceeded, with the aid of an assistant, to administer the gas. Her breathing I noticed was weak and shallow, so I requested her to take deeper inspirations ; however, there was not much improvement.

I continued the administration till I judged she was fully anæsthetised, took away the face piece, removed the two teeth and made a free opening into the antrum, from which then flowed a good stream of pus, and I was swabbing this away with a sponge when I noticed the face assume a very alarming appearance, and respiration becoming almost imperceptible. I immediately sent off my assistant for medical aid, placed the patient in the prone position, pulled out the tongue with forceps and cleared the back of the throat from blood and mucus, elevated the larynx, and compressed the walls of chest to try and induce respiration. Nitrite of amyl was also applied to patient's nose, but there was no response. Three minutes after Dr. J. Murdoch Brown came in, and he injected ether, first into the wall

of the chest and finally direct into the heart—artificial respiration being carried on for a considerable time by Dr. Brown and myself without any result. When I first became alarmed the face had assumed a white and waxy appearance. A minute or so after this the face exhibited a bluish hue, which broke up into patches, lessening and gradually disappearing, leaving the face of a yellowish colour but with a very peaceful expression.

Since the death I have been informed by her medical attendant that Lady Milne suffered from fatty degeneration of the heart, so that, no doubt, syncope was the cause of death. What also contributed to it was the fact that her ladyship's corsets were found to be so tight that they had to be slit up with a knife. Miss Milne informed me that her mother had a presentiment that she would not survive the operation, and there is no doubt that Lady Milne was deeply impressed by this—so much so that digestion had been seriously interfered with, her stomach being quite full of undigested food which was ejected during the process of artificial respiration.

ANTISEPTIC VENTILATION.

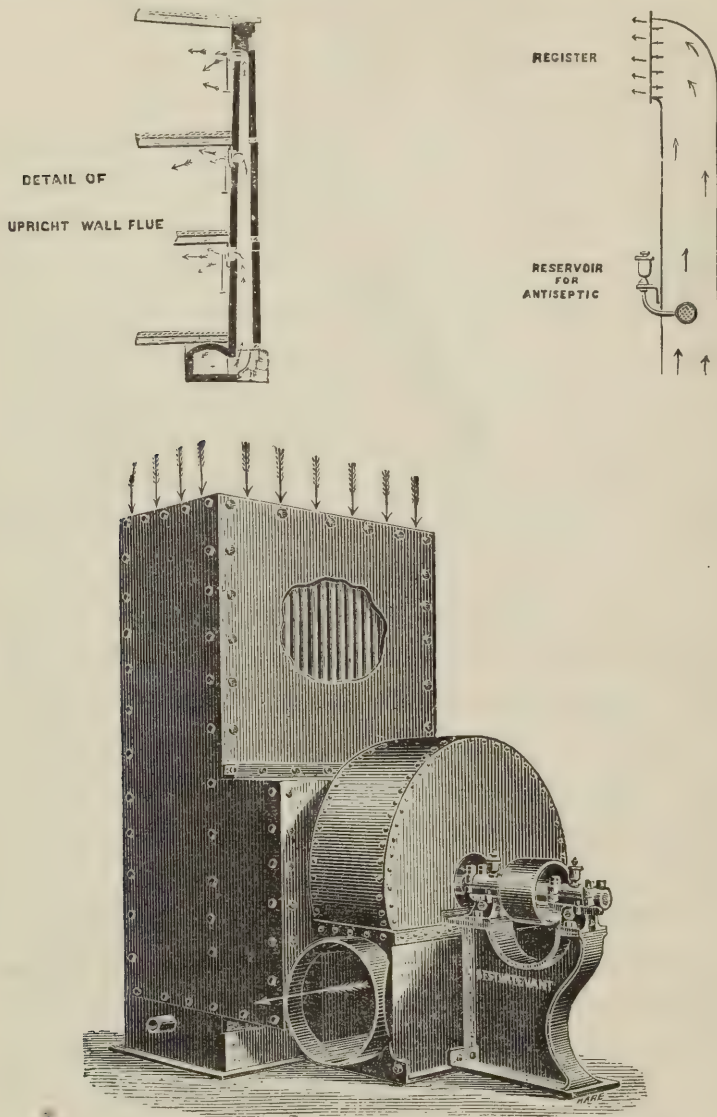
A PAPER was read at the recent Sanitary Congress at Worcester by Mr. S. M. Burroughs, on "Antiseptic Ventilation for Hospitals and Sanitoriums," in which he described and illustrated an invention or system the object of which is to first filter the air, then to regulate its temperature, then to propel it to any room desired, and lastly to render it antiseptic. He had selected the system of the Sturtevant Blower Company of London as being most suitable for the application of his invention, because it can be made to blow air to any part of a building by means of sheet-iron or tin pipes.

The blower consists of a revolving fan having several blades parallel to the axis. It can be run by a steam-engine, which can also be utilised for lifts, electric lights, centrifugals in laundries, mills for grinding, &c. The waste steam from the engine supplies the heat, excepting perhaps for a large building, when it can be supplemented by live steam.

1. The air can be drawn down a chimney or shaft, and is filtered through a coarse strainer to remove the larger particles, and through finer material to take out fine dust, fog, and smoke.

2. If the air is of the right temperature it is drawn directly into the blower, but if it requires to be heated, a damper directs it into a rectangular box of sheet iron packed with tubes containing waste

steam from the engine, or live steam from the boiler, or both. In circulating round these tubes the air becomes heated, is drawn through the blower, and propelled through main and branch pipes to any or every part of the building.



3. If only one antiseptic or air medication be desired at one time it may be distributed from the main pipe, but a different medication can be used for each room if required.

4. A volatile antiseptic may be conveniently introduced by means of suitable mechanism, by means of which the liquid can be made to drop regularly in pure sponge or other absorbent or distributing material, whence it is readily absorbed by the current of air. Carbolic acid, creolin, pinol, pumiline, terebene, eucalyptia, thymol or other volatile antiseptic can be readily employed in this manner.

5. If the air is too moist or too warm, it can be both dried and

cooled by causing cold water to pass through the pipes referred to instead of steam. The object of the invention is to enable hospital physicians to exactly control the temperature and to medicate the air, having previously deprived it of dust, &c. The apparatus is not secret or patented, and can be used freely by anyone.

It constitutes the most economical system of heating, and for ventilation is most effectual; while for the antiseptic treatment of consumption and germ diseases, also for making antiseptic the surgical wards of hospitals, it possesses advantages over inhalers and personal appliances, which interfere more or less with natural breathing.

The paper was very favourably received, and a discussion followed in which Sir Douglas Galton took part, he considering that the Sturtevant ventilating system would be of much service in the heating and ventilation of schools, where the air was usually very foul. The president of the section also thanked Mr. Burroughs for his paper.—*Chemist and Druggist*.

PYORRHŒA ALVEOLARIS.

BY GEO. W. MILLER, DES MOINES, IOWA.

THAT the predisposing cause of pyorrhœa alveolaris is not in the peridental membrane or the alveolus, but must be looked for in some other tissue, is proved by the fact that when the tooth affected is extracted, the symptoms at once begin to lose their identity, and are in a very few hours lost in the traumatic socket of the late offender. This being true, we must turn our attention to this organ, and if possible try to find a feasible reason for the conclusion that through the living tissue of the human tooth is conveyed the predisposing cause of pyorrhœa.

The living tissues of a tooth, to some, mean nothing more than the pulp. They fail to comprehend the fact that there are such things as dentinal tubuli, interglobular spaces, lacunæ and canaliculi, and that these are filled with fibrils of living tissue, connected on the one side by the peridental membrane, on the other by the pulp. Whenever the vitality of the fibrilla is lessened to such a degree that the circulating fluid contained therein becomes vitiated, there is a letting go, a loosening of the peridental membrane from the cementum, an exudation of the watery portion of the blood from both the tissue within the dentine and the capillary vessels of the pericementum.

From the irritating influence of this exudation are formed the first symptoms of pyorrhœa.

Soon after the parting of the gum from the tooth, there is a deposit of serumal calculus, which in point of time, is secondary, and of course cannot be the cause of the disease as some suppose.

The idea that the condition for the development of pyorrhœa is dependent on the vitality of the pulp, was first brought to my mind a few years ago by my worthy colleague and true friend, Dr. Hughes, who asked me if I had ever seen a pulpless tooth affected with this disease. Not having seen one I determined to find one if possible, but to this date my search has been in vain; but I found that teeth whose pulps were devitalised before, or after the beginning of the treatment for this disease, require less time to assume a healthy condition than those that were alive.

By devitalization the source of conveyance of the predisposing cause is removed. The dentinal tubules are no longer supplied with fluid to fill them, the tubuli are purified by antiseptic treatment, the pulp canals filled, and the peridental membrane, where attached to the cementum, is allowed to rest from the force of the capillary circulation from the pulp through the tubuli of the dentine.

The gums and alveolar process proceed at once to recover, because there is no more irritation from the breaking down of the peridental membrane. A pulpless tooth is forever free from pyorrhœa, while a tooth with a living pulp is always subject to the same influences that caused the disease in the beginning, it matters not how successfully treated. Recurrence of the disease may be looked for at any time.

The question naturally arises, how do you account for the healing of the gums and alveolar process around a tooth with pyorrhœa from the ordinary treatment, where the predisposing cause comes from within?

The usual treatment is, first, cleansing from all deposit of serumal calculus, by scaling the surface of the cementum with a sharp instrument—also removing all diseased portion of the alveolar border by excision. Second, by clearing away all *débris* by a free use of peroxide of hydrogen. Third, to bathe all of the accessible surfaces of the cementum with carbolic acid and caustic potash, equal parts.

By the scaling and scraping process there is a traumatic condition produced, which, aided by the escharotic effect of the remedy used, closes the mouths of thousands of minute vessels and stops the exudation of vitiated fluid into the pus-pocket, which, as I have stated before, is the real cause of the first symptoms of the disease.

After you have thoroughly cleaned and treated the affected surfaces, you should wait a sufficient time for the recovery of the tissue, which should not be less than three or four weeks. If you persist in the injection of medicines into the wound, you interfere with nature's process of repair.—*Archives*.

REMARKS ON PROFESSOR BURDON SANDERSON'S THEORY OF ASPHYXIA.*

By GEORGE JOHNSON, M.D., F.R.S.

IN my recently published Essay on Asphyxia I have suggested as a probable explanation of Dr. Burdon Sanderson's statement that both sides of the heart are equally distended immediately after death from apnœa, that such a result might be brought about by a dose of curara sufficiently in excess to paralyse the vaso-motor nerves and the arterioles.

Since the publication of the essay in question I have read Dr. Sanderson's Croonian lecture on the "Influence exerted by the Movements of Respiration on the Circulation of the Blood,"† and also the abstract of the same lecture in the Proceedings of the Royal Society, 1867. In the lecture at p. 586, the results of experiments with woorara‡ upon four dogs are described, and it is stated that "in the two last experiments the quantity used corresponded to one-tenth of a gramme of solid woorara."

Dr. Rutherford, in his lecture on the "Circulation," § says, that "the dose of curara should be just sufficient to paralyse the voluntary muscles; if the dose be excessive, the vasomotor nerves are also paralysed. The amount given should be six milligrammes for a rabbit in winter, and three milligrammes in summer; twelve milligrammes for a small dog, and eighteen milligrammes for a large one."

Dr. Sanderson's dose of one-tenth of a gramme, which is, in other words, one hundred milligrammes, was more than five times the amount which Dr. Rutherford employs on a large dog. It is not therefore, surprising that the results obtained by these two experimenters should be contradictory.

* Dr. Johnson requests that this paper, reprinted from *The Lancet*, August 10th, 1889, may be read as an Appendix to Section II. of his Essay on Asphyxia.

† *Philosophical Transactions*, 1867.

‡ Another name for curara.

§ *The Lancet*, Feb. 17th, 1872, p. 213.

Dr. Sanderson attributes the increased systemic arterial pressure which occurs during the first stage of apnoea to the violent respiratory efforts. He says :* "It may be concluded that the extraordinary elevation of arterial pressure which has been long known to occur during the second minute in death from apnoea is not due, as was supposed by Dr. Alison and Dr. John Reid, to obstruction of the capillary vessels, either pulmonary or systemic, but to the violence of the respiratory efforts. The cavity of the chest being closed, the force exercised by the respiratory muscles expresses itself in variations of tension of the enclosed air, which are communicated through the intra-thoracic arteries to those outside of the chest, producing those violent oscillations of the dynamometer which have been referred to. In support of this inference, it was shown that in an animal under the influence of woorara (when all respiratory movement ceases while those of the heart are unaffected), the process of apnoea is not only of greater duration, but is not attended with any of those greater disturbances of the circulation which have been hitherto attributed to capillary obstruction. The gradual extinction of the force of the contraction of the heart is indicated by a slow and uninterrupted subsidence of the arterial pressure.

Now, in justice to Dr. Reid, I maintain that no one can have carefully read his most interesting and instructive paper on the "Order of Succession in which the Vital Actions are arrested in Asphyxia," without perceiving that he clearly distinguished between the steady increase of arterial pressure resulting from the impeded transit of unærated blood through the minute systemic vessels and the greater paroxysmal increase which he correctly attributed to the violent respiratory movements and struggles of the animal.†

If Dr. Reid's experiments left any doubt as to the existence of increased arterial pressure, easily distinguishable from that caused by the struggles of the animal, Mr. Erichsen's‡ carefully conducted experiments upon animals, in which muscular movements were annihilated by pithing, should suffice to convince the most sceptical. In one experiment, after artificial respiration had been suspended, Mr. Erichsen found that the mercury in the dynamometer, which had stood at from $3\frac{1}{2}$ -in. to 4-in., rose to from $5\frac{3}{4}$ -in. to $6\frac{1}{2}$ -in., at

* Abstract, p. 393.

† See pp. 39 to 41 of his "Physiological, Anatomical, and Pathological Researches."

‡ *Edinburgh Medical and Surgical Journal*, 1845.

which it stood for about two minutes. In another experiment the mercury rose from between $3\frac{1}{2}$ -in. and $4\frac{1}{2}$ -in. to $6\frac{1}{2}$ -in. and $6\frac{3}{4}$ -in. In a third experiment the mercury rose 2-in. or $2\frac{1}{2}$ -in. above the level at which it stood when inflation of the lungs was suspended.

These experiments should have sufficed to place beyond all controversy the accuracy of Dr. Reid's original statement, that, contrary to his own preconceived idea, there is, for a period of about two minutes after respiration has ceased, an increase of systemic arterial tension and pressure, the result of an impediment to the passage of unaerated blood through the terminal systemic vessels.

Dr. Rutherford's experiments upon a dog paralysed by a moderate dose of curara and with the chest and pericardium opened, have shown that with the increased systemic arterial tension during the first stage of apnœa, the pressure within the left cavities of the heart is so great as to distend them to an inordinate degree. Now that we have proof of the excessive dose of curara employed by Dr. Sanderson, we can understand the discrepancy between his results and those of other observers. The vaso-motor nerves, both pulmonary and systemic, being paralysed, the regulating and controlling power of the arterioles is annihilated, there is no increase of pressure in the systemic arterioles, therefore no distension of the left cavities of the heart. "The process of apnœa, is of greater duration," for the reason that the pulmonary arterioles being paralysed, have lost the power of arresting the flow of blood through the lungs. The apnœal process is therefore prolonged, as it is in newly born animals with a patulous foramen ovale, which allows the blood to pass directly from the right to the left side of the heart, and thus to evade the controlling influence of the pulmonary arterioles. The amount of blood on the two sides of the heart after death is therefore equal, or nearly so; and, as Dr. Sanderson says, "the gradual extinction of the force of the contraction of the heart is indicated by a slow and uninterrupted subsidence of the arterial pressure."

The vaso-motor paralysis resulting from an over-dose of curara is so far instructive that it affords confirmatory evidence that the early systemic and the later pulmonic obstruction during the progress of apnœa are results of contraction of the arterioles. For this indirect proof of the influence which the unparalysed arterioles exert upon the circulation during the successive stages of apnœa we are indebted to Dr. Sanderson's experiments with excessive doses of curara; but, unfortunately, the entirely exceptional condition thus induced has

led Dr. Sanderson to contradict the statements of Dr. Alison, Dr. John Reid, and many other accurate observers, and to attempt the revival of the antiquated theory of Bichat, which assumes that the immediate cause of death from apnoea (asphyxia) is not the arrest of the pulmonary circulation, but cardiac paralysis, consequent on the circulation of venous blood through the coronary vessels—a theory which, in my essay on asphyxia, I have proved to be inconsistent with indisputable facts. Before the publication of my essay, I had carefully studied Dr. Sanderson's chapter on Respiration in the "Handbook for the Physiological Laboratory," but I had not read his Croonian lecture at the Royal Society, and therefore, not knowing what dose of curara he had employed, I could only surmise that his exceptional results were due to vaso-motor paralysis caused by excessive doses of the poison. That this is the true and complete explanation of the facts has now, I think, been conclusively proved.

ANNOUNCEMENTS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE next meeting of the above Society will be held at 40, Leicester Square, W.C., on Monday, November 4th, at 8 p.m. *Business*—Paper by Felix Semon, M.D., F.R.C.P.—"On some points in the etiology, diagnosis, and treatment of Empyema of the Antrum."

STUDENTS' SOCIETY OF DENTAL HOSPITAL OF LONDON.

THE next meeting will be held on Monday, November 11th. Paper on "Implantation of Teeth" by Mr. Preedy.

APPOINTMENTS.

SMALE, C. H., to be House Dental Surgeon to the Victoria Dental Hospital, Manchester, *vice* Mr. P. A. Linnell, resigned.

SMALE, MORTON, M.R.C.S., L.S.A., L.D.S., to be a member of the board of Dental Examiners, Royal College of Surgeons of England.

PRAGER, ISIDORE F., L.D.S.I., to be Dental Surgeon to the Western General Dispensary, Marylebone.

THE DENTAL RECORD, LONDON: NOV. 1, 1889.

THE USE OF SPRINGS IN THE RETENTION OF
ARTIFICIAL DENTURES.

CAN we afford to dispense altogether with the use of springs for the retention of artificial dentures? From observations which one hears promiscuously dropped now and again, we might be tempted to answer thoughtlessly in the affirmative. A well-known American dentist, who was visiting this country, told a brother practitioner that in the whole course of his professional experience he did not think he had ever made *three sets of teeth with springs*. Such a statement is to us astounding. Again, only the other day a student asked whether it were possible to find any accurate instructions for the arrangement of swivels, as in the book on mechanical dentistry which he had read, the subject had been dismissed with scant ceremony—or at least with but a meagre notice—as being *obsolete*. If any one cared to find out whether this system of retaining artificial dentures had died a natural death, a simple enquiry at any of our dental depôts would soon dissipate the notion. Some of our best mechanics still use springs, and until some adequate substitute be found, they will probably continue to do so in certain classes of cases. That it is desirable to do away with such uncomfortable adjuncts as far as possible goes without saying, and the fact that modern practitioners do not use them to the extent that their forefathers did, speaks to the improvements that have gradually forged their way into our methods of procedure; but whether we shall ever be able to bid good-bye to our old friends is problematic.

Now there are three classes of cases where our ingenuity has to fall back upon the use of springs, and where we cannot afford to affect contempt for their assistance. The first class includes edentulous mouths, almost as flat as the palm of one's hand, which absolutely refuse to be charmed

with "plaster impressions," "suction," "Fulsome ridges," and the other wiles of mechanical art. Someone whispers faulty manipulation. This may be true of a good many cases, but have we not met with others where the assistance of springs has been our sheet and only anchor? The second class is not at all uncommon, and consists of cases where the patient cannot endure a large suction plate. We know that in many instances this can be overcome by a little patience, but there still remain a large number where toleration absolutely refuses to step in; and the persistent retching and discomfort of the patient either compels you to assist him out of his trouble with a small plate and springs, or—what amounts to the same thing—he seeks the services of someone else who has more respect for his patient's comfort than for his own prejudices. The last class is by no means a small one; it is that of patients who suffer mentally this may simply be nervousness or absolute lack of intelligence. Many public speakers of a nervous disposition, who otherwise would be able to retain a set of teeth with comparative ease, find themselves unable to bowl out their impassioned oratory through an apparatus which is dependent on the unknown quantity of a power which their dentist has mysteriously described as "suction." Want of faith. Quite so; but you cannot make people swallow faith in "suction" in the same manner as they bolt their aperient pills. Again, in those of enfeebled intellect, either from old age or other causes, the value of springs has proved inestimable. You cannot argue with these people; what you have to do is to place a denture in the mouth which has the physical power of remaining in its proper position without any assistance from the patient in the form of confidence, which unfortunately they are unable to provide.

There is no part of mechanical dentistry which requires more accuracy and intelligence than the proper adjustment of springs. If we can do without them all the better for us and our patients; but we should at all times be on the alert to discover those cases where their assistance is indicated

as conducive to the comfort of the patient; and having made up our minds as to the necessity of calling in their aid, it behoves us to apply those mechanical laws which govern their use, so as to secure the maximum of efficiency with the minimum of discomfort.

Infection from the Mouth. In the section of ophthalmology at the last meeting of the British Medical Association, Mr. Hewetson, of Leeds, whilst discussing the advisability of using antiseptic precautions in operating for senile cataract, said: "I am inclined to lay great stress upon not speaking over the patient. I am quite convinced this latter is a true source of danger in the minute spray-like particles of saliva ejected from the mouth, which certainly are always spirting out whilst we speak, and may, nay must, if we talk, settle on the wound. That our breath is also a source of danger I have no manner of doubt, since few of us are free from carious teeth, and it is well known that pathogenic microbes infest the mouth and carious teeth." We can well understand that the precautions mentioned have a substantial bearing upon the success of ophthalmic operations, and we should do well as dental surgeons to pay more and more attention to ensuring—as far as possible—antiseptic precautions, in dealing with operations about the mouth. A well-known lecturer on midwifery, in impressing upon his class the importance of strict cleanliness in the lying-in room, used to relate the story of a medical practitioner who lost several patients in succession from puerperal septicæmia, and who, in despair, suspecting that he carried in his own person some form of infection, took a long holiday, and sought change of air. He returned to his practice, and the very first patient he attended in her confinement after his return succumbed to a fatal attack of blood poisoning. At this juncture he discovered that he was suffering from a discharge from some carious teeth, and after having them attended to was afterwards free from what had proved a burden of great anxiety. The incident certainly has its value for us, and should not fail to impress upon us a moral which is much needed. No one has the smallest right to spread infection of any sort, and it is just possible that dentists may be responsible for more carelessness than they care to admit—even to themselves.

GOSSIP.

DR. ROBERT RENTOUL, who has paid much attention to the subject of hospital and dispensary management, has published a proposed scale of fees for the public medical service of England, payable by wage earners who are making under 45s. per week per family, from all sources. The dental scale is rather interesting, and is drawn up—the writer says—after prolonged deliberation and the consultation of dentists. The fees would certainly not be paid in a place like London where dental hospitals are to be found, and some of the items would scarcely be remunerative to the dentist. The scale must be allowed to speak for itself.

DENTAL FEES.				s.	d.
Extraction per tooth...	...	...	...	1	0
„ each extra tooth...	...	...	...	0	6
„ under gas ..	...	...	...	2	6
„ „ and each extra tooth...				0	6
Stopping with amalgam, per tooth	...	...	...	2	0
„ „ gold „	...	...	...	4	0
Extractions under ether or chloroform	...	...	...	12	6
Artificial tooth, with vulcanite plate	...	...	...	4	6
„ „ „ „ and each extra tooth	...	...	...	2	0
Scaling teeth ...	...	...	...	2	6
Examination of all the teeth without operation	...	...	...	2	0
Small operations on the gums, or removing tumour ...	...	...	...	3	6
Regulating apparatus for deformed jaw or teeth, made of tin or vulcanite	...	...	...	7	6
Visits to patients' home, the same as medical fee for such					
Cleansing and stopping of root, the same fee as stopping of tooth					
Administration of ether or chloroform by doctor for dental operation	...	...	...	7	0

As some dentists are prescribing antipyrin rather largely it may be well to warn them that this drug is not altogether free from danger. Surgeon-Major Bourns thus writes to the *British Medical*

Journal.—Some two years ago, whilst residing in the south of France, a patient of mine—a martyr to neuralgia—was recommended antipyrin in doses of 20 grains, to be repeated in three hours if required, and has used it constantly, if not recklessly, ever since. No doubt it acts like a charm on the neuralgia, but it also produces a condition of the mucous membrane of the lips, tongue, and mouth which reduces the cure to the level of the disease. About half-an-hour after the administration of the drug a slight itching of the lips and tongue is observed, accompanied by an increased flow of saliva. The lips assume a dark purple colour, with a sharply-defined edge where the mucous membrane runs into the true skin, exactly like the painted lips of actors when closely seen. This is followed by considerable swelling of the tongue and small white patches on the surface of the labial, buccal, and sublingual mucous membrane, which extends to the fauces when the dose has to be repeated. At this period the pain and irritation are considerable, mastication is impossible, and even the swallowing of fluids causes no little difficulty. In the course of twenty-four hours small shallow ulcers take the place of the white patches, and subsequently heal readily enough. I may add that from first to last there is no constitutional disturbance. I have neither seen this effect alluded to in books, nor have I met anyone who has observed it; hence this note.

THE negro philosopher, who laid down that “where ignorance is bliss, 'tis folly to be ugly,” was not perhaps far wrong. A Maine dentist tells of a man who came into his office and insisted on having a sound tooth extracted—not because he had neuralgia in his face, but because a faith-healer had told him that it would improve his general health to have a tooth pulled. The patient was evidently a *maine-iac*.

TWENTY-SIX new students entered in October at the Dental Hospital of London.

A WELL-KNOWN administrator of N_2O called at a dentist's to keep an appointment, and on stepping into the hall was met by the servant, who did not recognise him, with puzzled looks. Being a man of few words, he uttered in an explanatory tone “gas.” “Oh,” said the servant, “please step into the kitchen, the meter is down there.” Moral: brevity may be the soul of wit but is not always the psychical attribute of expediency.

A SUCCESSFUL smoking concert in connection with the Athletic Club of the Dental Hospital of London was held on Friday evening, October 25th, at the Hummum's Hotel, under the presidency of Mr. George Gregson, the senior surgeon of the hospital. Several members of the staff were present, and some good music was listened to. Mr. Smith Turner fairly "brought down the house" by his masterly rendering of his celebrated song "Good St. Anthony." Two more concerts will be held during the session.

THE following letter, from Sir John Tomes to the Secretary of the English Section of the Dental Congress lately held in Paris, will be read with interest.

"CATERHAM,

"30th August, 1889.

"DEAR CUNNINGHAM,—Quite unable to attend in person, may I ask you to make known to the Meeting my full appreciation of the honor conferred upon me in my election to the Hon. Presidency of the English Branch of the Dental Congress. Any movement which has for its aim the advancement of knowledge and of the practice of dental surgery engages my sympathy, and especially when parties holding different views as to the means and methods best suited to dental education meet to further the common end.

"I feel strongly that any attempt to alienate dental from general surgery, to regard it as a subject independent of and separable from the general subject of which it is a branch, would be attended with a degradation of the educational and social position to which the dental surgeon has risen. The allegation that surgeons know but little of dentistry should have its counterfoil written—dentists have known but little of the principles of medical science.

"There is room for improvement on both sides, and any approach to separation of the branch from the parent stem would stand in the way of higher cultivation, general and special. On this account I feel that the educational ends of our profession will be best attained by the support of a dental section of an International Medical Congress, than by the encouragement of a Special Dental Congress. For the limitation of a subject within its narrowest lines tends to dwarf the view of the practitioner and to take from him all sense of proportion, a sure path to future inferiority in those who practice one branch of a subject divisible into many independent branches. Who shall say that teeth, eyes, ears, &c., are not interdependent parts of the human body regarded as a whole?

"International Dental Congresses and dental branches of International Medical Congresses could not both exist. The one would take from the prosperity and utility of the other, and personally I believe that our efforts should be directed to maintaining the closest possible connection between general and dental surgery, and hence to promoting the full development of the dental sections of the International Medical Congress of the future as of the past.

"Again expressing my thanks to the Executive of the Congress,

"I remain,

"Yours truly,

"JOHN TOMES.

"George Cunningham, Esq.,

"*Hon. Secretary,*

"Congrès International Dentaire."

THE annual dinner of the Staff and Past and Present Students of the Dental Hospital of London will be held on Saturday, November 30th, at the Holborn Restaurant, when Mr. Christopher Heath will preside. The date has been selected to suit the convenience of members of the Odontological Society and Representative Board of the British Dental Association. We trust the past students will muster in good force, and send in their names in good time to Mr. Morton Smale who is carrying out the arrangements.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from September 1st to September 30th, 1889 :—

September 1st to September 30th, 1869.					London.	National	Victoria.
Number of Patients attended					—	1870	1098
Extractions	{	Children under 14	...	...	493	370	779
		Adults	...	...	1013	532	
		Under Nitrous Oxide	751	671		67
Gold Stoppings	...	...	...	...	119	77	31
Other Stoppings...	...	...	...	...	582	413	121
Advice	...	...	...	...	180	235	—
Irregularities of the Teeth	...	...	...	...	...	47	—
Miscellaneous and Dressings	...	...	...	...	285	180	345
Total					3,403	2,525	1,343

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the DENTAL RECORD.

SIR,—In the review of my "Essay on Asphyxia," which you have done me the honour to publish in your July number, the following statement appears, "the view advanced that the phenomena of nitrous oxide inhalation are but asphyxial is not likely to meet with much favour." Obviously, the important question is not whether a theory is likely to be received with much or with little favour, but whether it is in accordance with well ascertained facts. Now, I am quite aware that nitrous oxide inhalation may induce anæsthesia without complete asphyxia, but in conversation with friends who have had a large experience in the administration of the gas, I have not met with one who has denied that when the inhalation is sufficiently prolonged, the invariable result is cyanosis with epileptiform convulsions; and in two rabbits which, in conjunction with my friend Mr. Hamilton Cartwright, I killed with the gas, the chest being opened immediately after the convulsions had ceased, the usual appearances after death from asphyxia were found, namely, great distension of the pulmonary artery, the right cavities of the heart and the systemic veins with extreme anæmia and collapse of the lungs, the left cavities of the heart containing only a small amount of dark unaerated blood. The immediate cause of death was evidently the arrest of the circulation by the contraction of the pulmonary arterioles.

The "muscular symptoms" which often occur when atmospheric air is mixed with the gas are of an entirely different character from the epileptiform convulsions of asphyxia. This muscular excitement is the result of imperfect anæsthesia, and its occurrence in the experience of its early administrators acquired for nitrous oxide the name of "laughing gas."

Unquestionably nitrous oxide is a rapidly asphyxiating gas, but from what I have seen of Dr. Frederic Hewitt's interesting experiments with a mixture of nitrous oxide and a small proportion of oxygen, I believe that it will henceforth be possible to ensure, as a constant result, the production of complete anæsthesia without the distressing and perilous phenomena of asphyxia.

Surely, the theory which received the support of the late Dr.

Snow, and which supposes that the common action of all anæsthetics is that of, in various ways, impeding the oxidation of the nervous tissues, is more rational than the assumption that each of these agents has "a specific anæsthetic action."

I am, Sir, Yours &c.,

GEORGE JOHNSON.

Savile Row, *October 22nd*, 1889.

DENTAL EDUCATION.

To the Editor of the DENTAL RECORD.

SIR,—In the October number of the DENTAL RECORD "An Old-Fashioned L.D.S." questions some of the statements made in my paper on "Dental Education."

With regard to the value and condition of the instruments used by medical students, I can only say that my experience has differed in no slight degree from his. The principal item however objected to by him is the sum of sixty guineas to be paid as a premium for learning mechanical dentistry. I was quite aware that premiums varied according to the status of the dentist, and therefore chose that amount, it being, as I considered, a fair average premium on the whole. If, as I understand from his letter, he considers that I have underestimated this item, it only serves to strengthen my argument as to the extra cost of the dental qualification as contrasted with the medical, and the advisability of obtaining both.

As to his remarks about "dental sweating, &c.," I would advise "An Old-Fashioned L.D.S." to again *carefully* read the paper, and he will have great difficulty in finding any sentence whatever regarding the articling of mechanical pupils, or any allegations that dentists ("big guns or little") are in the habit of accepting pupils for the sake of the premiums that may be obtained with them. I am quite alive to the importance of a good mechanical training, and advocated the withdrawal of subjects which are of no earthly use to a dentist, so that a greater length of time could be devoted to what dentistry pure and simple consists of, viz., "practical work."

Trusting you will kindly insert this,

I am, Yours, &c.,

E. C. FISK.

181, High Road, Kilburn, N.W.

25th October, 1889.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor, 2, James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers, 6 to 10, Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and Answers are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

ROOT FILLING.—I am obliged to "Old File" for his reply, for I wrote with the object of calling forth "something strong" on the other side of the question. Owing, doubtless, to my having written in a hurry, there were several printer's errors in my communication. I should have thought, however, that "irritatory" as a misprint for "irritating," was too obvious to call for comment.—W. G.

[In justice to "Old File" it is only fair to state that the word "irritatory" was *not* a misprint.—ED.]

QUERIES.

PARIAN CEMENT.—It has often struck me that some base could be got for models which would be harder than Plaster of Paris and stand more knocking about. Has anyone made any experiments in this direction? I should be glad to know whether Parian Cement has been tried, whether it is difficult to work, and whether it takes long to harden? Anyone answering these questions would much oblige.—ENQUIRER.

POROSITY IN RUBBER.—I saw an enquiry on this subject in a back number and have not seen any reply. I am particularly fond of using black rubber, and would like to know why thick cases are almost always porous, and how this can be prevented.—A. C.

ANSWERS.

A NEW ANÆSTHETIC.—We are sorry we cannot oblige our correspondent by inserting the paragraph sent, as we are not in the habit of advertising in our columns. If the formula of the "new anæsthetic" is forwarded, we shall be pleased to publish it.—ED.

CALCIUM CHLORIDE.—A. A. will find an account of this drug in Stocken's *Materia Medica*. I think I once heard Mr. Stocken, at a meeting of the Odontological Society, speak favourably of its use, but it is a long time ago and I do not remember particulars.—VIRTUS.

[There are still several queries appearing in back numbers which remain unanswered. Now that our correspondents have returned from their holiday and have settled down to work again, we invite them to contribute to the usefulness of the *RECORD* and the knowledge of their brethren by sending answers.—ED.]

[To avoid delay, ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) should be sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

THE DENTAL RECORD.

VOL. IX.

No. 12.

Original Communications.

SOME NOTES ON THE EARLY ART OF EXTRACTING TEETH.

By FREDERICK SLEEP, L.D.S.Glas. & Dub.

(Continued from page 492.)

PART III.

THE increasing freedom of the subject, and the tendency for a practical application of the principles of physical science, which marked the awakening of the Eighteenth Century, brought about not only a new era for our profession, but for almost every department of human progress. It was, however, from Fauchard that dentistry was to receive its first new impulse and direction. A glance at his work is sufficient to prove he was no rule of thumb man, and that he possessed the unsatisfied mind that is characteristic of the true scientist. It was impossible for him to see imperfection and not attempt improvement. Dentistry gained more from him than from all who preceded him back to the time of Albucas—700 years before, but unlike Albucas, who practised general surgery, Fauchard concentrated his thoughts upon a speciality he had almost created, and it is noteworthy that he was the first who attempted to rectify deformities of the mouth. His plates on obturators are alone sufficient to raise a feeling of admiration for the man. Justice can scarcely be done by scraps from such a work. Pictorial representation being, however, a universal language, I append a drawing of that which concerns us most, his improved pelican with a padded fulcrum, which is remarkable from the fact that it was the first instrument of the kind ever made on humane principles. Those desiring minute explanation will read Chaps. x., xi., and xii. of his work.

Those interested in this epoch will better appreciate the improvements introduced by the worthy Gaul, by a glance at the instruments figured in a plate in the works of his countryman and contemporary,

Dionis, demonstrator at the Royal Gardens, which will be found identical with those figured by Pare and Scultus long before. That other countries were no further in advance may be gathered from the entertaining "*Chirurgica Curiosa*" of Purmann of Breslau, and from the "*Medicina Rationalis Systematica*" of the celebrated Dr. Frederick Hoffman, Professor at the University of Halle and Surgeon to the King of Prussia, both which works were written about the same time. The latter affirms positively that teeth must not be drawn in the paroxysm of toothache, nor from plethoric subjects till bled from the sublingual veins or the foot, and the bowels previously opened. Where the nerve is exposed and aching, he recommends an operation he had successfully performed on himself—the application of the actual cautery. When we apply a little arsenic to an exposed nerve, and dismiss our patient for the day, how little we think of the heroic times when men rushed to battle, trumpet blast and glory in front—bellows blast and *flaming irons behind*, as a soothing anodyne, hæmostatic and encourager to greater deeds. Happy days! before strong tea and weak nerves became fashionable, when patients tripped into the dentist's sanctum to have the same agent applied to the most sensitive of nerves, and were even, through the difficulty of correct application, enjoined to apply it *themselves*, as Woofendale, as late as 1783, assured us he was obliged to do. Alas! for the next 100 years. Surely if Albucas, the fire lover, or any who followed his tenets were to rise again, they would look with contempt on this degenerate age. An age that cannot consider pain even as a celebrated Captain of the Dragoons in our father's time was wont—as a healthy stimulant. "*Oh, tempora! Oh, mores!*"

The art of extraction was dealt with tersely by Hunter; but every line is golden, for he seems the first who philosophically described and directed where, why, and how, force should be applied for its proper performance. I am inclined to think that an occasional retrospect of the works of our *elders* is likely to save our (Dr.) *Youngers* much useless and profitless experiment.

"Felix qui potuit rerum cognoscere causas."

De Chemant, whose friendship with Hunter is a laudable instance of distinguished men of different nationality coming together, like Christians for mutual help in their kindred professions. De Chemant says, "Mr. Hunter who used to be consulted on the diseases caused by artificial teeth (decaying bone work), thought at one time that

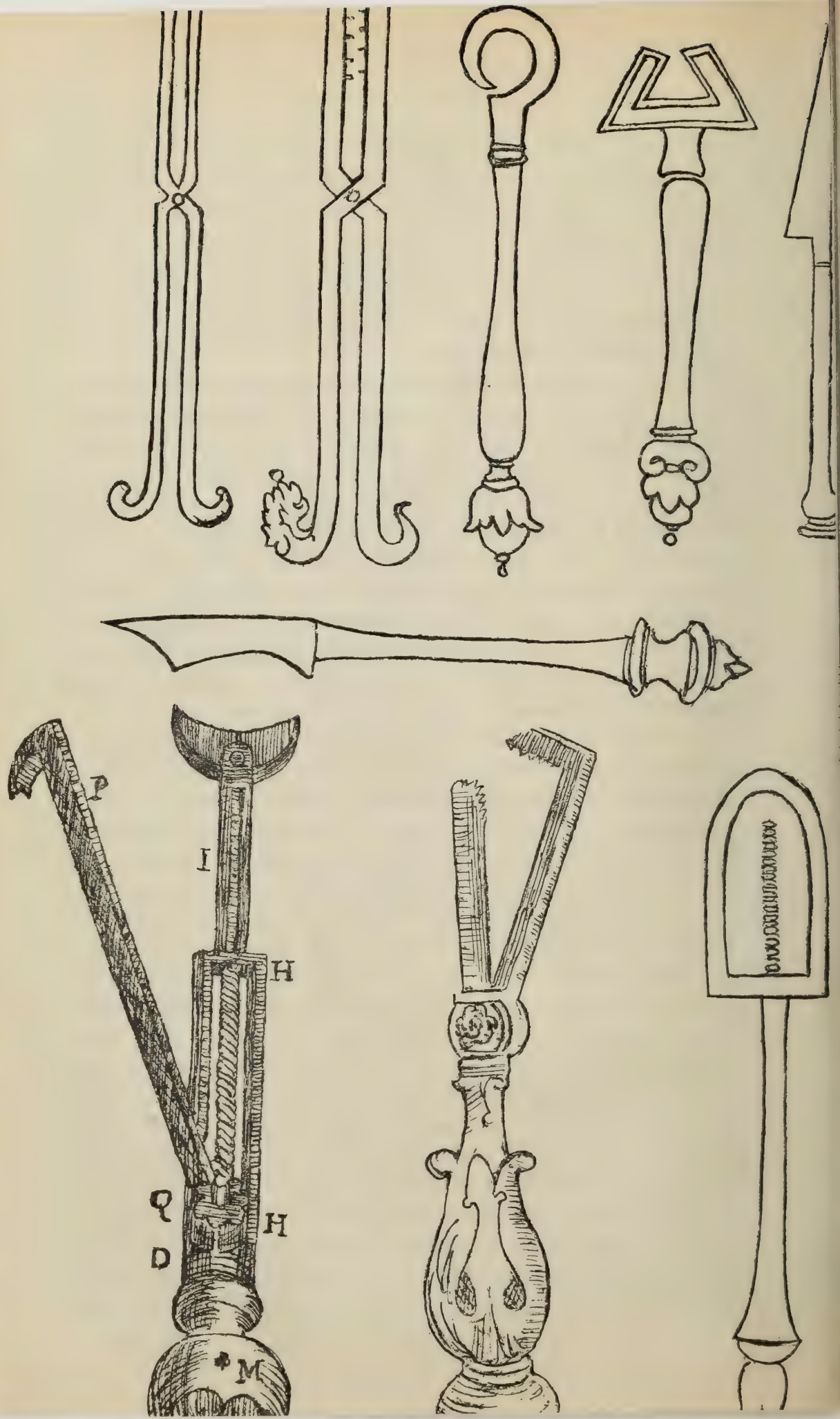
transplanted teeth might be substituted for those decayed. He recommended and was present several times at this operation, and it was not until after he had observed that they became loose, innoculated disease, and had afterwards to be removed that he renounced this cruel practice and became, I may take the liberty to observe, an enthusiast in my discovery" (mineral teeth). Berdmore wrote some ten years before Hunter's work appeared, yet then we find replacement a common practice.

His method of replantation differs not from that ordinarily practised now. The tooth was, in the absence of an efficient pulp-destroyer extracted. He then cleared the coagulated blood from the socket, slightly shortened the roots, cleared and filled right through with lead or gold, carefully replaced, and reaped the same harvest we do at present, a moderate amount of discomfort, toleration, and gradual exfoliation. To a contemporary and fellow countryman of De Chemant's has been attributed the invention of the key. I refer to Garengot, the surgeon, who published his work "*Nouveau traite des instruments*," in 1720, eight years before Fauchard's first edition. This, however, as may be seen by the plates is a mistake, he merely improved the adjustment of the claw of the pelican.

From the field we have gone over, and the illustrations supplied, we are now in a position to survey the rise and progress of the art of extraction as disclosed by the improvements in those symbols of our profession. In my first chapter I remarked that Aristotle was the first who mentioned an extracting instrument by name, and that he called it *Odontagra*—a tooth trap (*Podagra*—foot trap, gout). The subject is mentioned in his "mechanical questions." From an Elizabethan edition on my shelves, I find it was a very different instrument to the forcep of our day. It was indeed nothing else but a double-ended wheel pelican, probably identical with the fearful engine figured horizontally among those instruments from Pare's work. It was used, however, by the Greek more as a shaker than an extractor; that operation being left for the fingers. This then, with the exception of the leaden forceps at Delphos, was the first extracting instrument concerning which we have any positive knowledge. Coming on to Albucas, we find no trace whatever of this persistent instrument, and it is the more remarkable, as Aristotle's works were in particular estimation among the Moors, and at this time Cordova was the high school of Europe, and the learned of every country were invited and made welcome. That

(The 2 eyes are numbered from the left and from above downwards.)

Figs. 1 to 6, also Fig. 9, from Albucasis, A.D. 1200. Figs. 1 and 2, Tooth Forceps (used also for extracting arrows). Figs. 3 and 4, Tooth Looseners. Figs. 5 and 6, Rascarii or Elevators—Fig. 5 Flat. Fig. 6, Concave (and used also for fistula). Fig. 9, Gestum or root extractor. Fig. 7, The improved Pelican of Garengnot, 1720. Fig. 8, A Pelican from Scultus, A.D. 1645.



Figs. 1 to 4, also 6, from Scultus, A.D. 1645. Fig. 1, A double Pelican. Figs. 2 and 4, Forceps. Fig. 3, A Loosener. Fig. 6, Vectis Trifidus or three toed elevator.
 Fig. 5, The Improved Pelican of Fauchard, 1728. Fig. 7, Forcep from Garengot, 1720.



there were a number of instruments known his text demonstrates ; but that he preferred the principle of the modern forcep is very evident, from the sound advice he gives us to lay hold of the tooth at a sound place, and to draw straight, lest it be broken ; and it is strange that, from the Arabian right down to Hunter, no one seemed to recognise the advantage of drawing a cone in the line of its axis whilst making movement.

Hunter was, however, too sagacious to see perfection in the pelican, honoured as it was by the voice and patronage of antiquity. He says "It would be better to extract a tooth in the direction of its axis, but that is not practicable by the instruments at present in use, which pull laterally." The forceps of the Arabian, however, were, whether plain or toothed (*vide plate*), so poorly adapted to the necks of the teeth that in most cases he was obliged to call in the aid of his rasorii, or his looseners, to make the tooth fairly mobile before trusting to the instrument. The rasorii may be considered the remote ancestors of the elevators. In fact, one is very like to a clumsy straight elevator, common to every surgery before the improvements of Thompson. The remaining rasorii were instruments shaped very like stout-pointed dissecting knives—and he was not above using his scaling instruments at a push. The looseners (*vide plate*) were used to effect the same purpose, by moving the tooth from side to side, in the same manner as the rasorii had moved them from front to back. The root-lifter, or "gestum," spoken of in the text and figured, was without doubt drawn after the manner of the Chinese, in defiance of all the principles of perspective.

The head of the instrument was evidently curved, the concave side fitting over the alveolar border, with one end resting inside, whilst the screw being turned by the handle, reached the root through the alveolus, and either forced it up or keyed it out. The "gestum" may at first sight appear barbarous, but I question whether, if clumsier, it caused more pain than our double cowhorn forceps in daily use. I cannot find text to prove that the forcep was used at all by the Greeks ; Dionis, the Frenchman, however, declared that a lower root forcep was used by them under the name of risagra. The nomenclature of the instruments is somewhat perplexing, as some of the old writers, Pare especially, uses the name of mullet, pelican, and forcep, indifferently for the same. The word pelican was derived from the claw fancifully approaching the shape of the

beak of that bird, whilst the word mullet is evidently derived from Fr. mollets, which means holding pincers. Modern etymology and usage, however, compel us to make a clear distinction between instruments used with lifting power directly on the lines of the axes of the teeth and those used as wrenches and at right angles to them.

The angle at which the pelican acted must have made it an instrument capable at times of doing considerable mischief. Fractures of the jaw and lacerations of the gums of a greater or less degree must have attended almost every case, and we can readily understand why hæmorrhage, as Nuck and others affirmed, was so common. The key, as we know, made the side of the shaft the fulcrum instead of the point of it, as in the pelican, and the claw, instead of falling over the point, worked at right angles to it. A great increase of power over our forcep would seem to be gained by this instrument ; this is a mistake, a great deal of the power being lost on the socket, which, as a consequence, got considerably bruised and mangled, adding greatly to the pain in operating and injury afterwards.

The key, however, from the readier application and lessened liability to slip in various directions, was a great improvement on the pelican, and after its introduction we hear fewer warnings concerning the possibility of extracting three at once, which is not only embalmed in good old Pare's work, but derives additional interest and force from the fact that the application of this very instrument is said to have hurried this illustrious man himself to his grave. Humanity is indebted to a Mr. Spence for the invention of the key, which was introduced in its embryonic form with the claw fixed in advance of the bolster, and it is interesting to observe that it was at first only offered and recommended as a valuable instrument for the extraction of the wisdom teeth. The improvements of the raised shaft and rounded fulcrum originated with Savigny, whilst the movable bolster is said to have been brought out by Duval. But two surgeons, Jardine and Aitkin, improved on the idea by keeping the bolster from shifting out or slipping down. The claw, likewise, being hinged above the fulcrum, traction was exerted at a far less angle than that of any of the multitude of instruments invented hitherto ; in fact, Aitkin's instrument was as perfect a one as it was possible to conceive on the principle.

There is every evidence that extraction, before the works of Fauchard and Berdmore, was considered a dreadful operation, fraught with danger, to be avoided if possible, and to be performed only

when absolutely necessary. Nor, indeed, is it to be wondered at. Even Fauchard's improved pelican or Spence's key are instruments which the modern dentist would tremble to use, for the claws of both being placed in advance of the bolster, the merest movement on the part of the patient or operator was likely, through the obliquity of the applied force, to cause disastrous fracture.

The latter part of the Eighteenth Century saw the key perfected, whilst the beginning of the next saw its doom pronounced through the simultaneous independent invention of neck adapted forceps by Messrs. Fay & Matthews,—true it was as the detractor pointed out, the forceps had been used occasionally from antiquity. But what sort of instrument was it? Just for a moment study the drawings appended from Garengéot and Fauchard, they were one and all miserable articles contrasted with the vilest trash sold since 1826. Those for lower molars possessed two claws on each beak, made by filing out an *interspace* in the very place Fay placed the interroot *projection* we are so familiar with, whilst their “dogbiters,” “ravenbeaks,” “crowbills,” &c., were either so parallel before opening that when they were opened to receive the tooth the jaws represented the insides of the letter V and failed to grasp the neck at all (*vide* Scultus and Garengéot), or the jaws were so abruptly incurved that the misplaced points at their tips served to make them capital excising forceps. Indeed, with the exception of a solitary forcep figured by Aitkin, for bicuspid and stumps, which he brought forward with the above key, I have never seen an instrument that would either embrace the neck at all, or when it did, was not more fitted for a crown-splitter than an extractor. We see, by the instrument from Scultus, this defect was recognized by their attempts to regulate the pressure at the neck by a screw through the handle, hence we can readily understand why, notwithstanding occasional accidents, we find Bell declare that “those who were so frothy in condemnation of the key were the first to fly to it in case of difficulty.”

In the light of the present we may wonder at this statement, but we must not forget that hitherto for reasons given, the forcep had been tried over and again and found wanting, and it was but natural that the doubts of centuries brought with it a trembling and a fear—the debility of indecision, and a prejudice against an old instrument with new promises. Even Harris, in the middle of the present century, felt obliged to give directions in his “Principles and Practice,” for the use of the old standby, whilst on this side the

"pond," we find Robinson saying, "it is true that mischief may and sometimes does occur from unskilful use of the key, but the same may be said of every instrument used in surgery. The distinguished Berdmore, whose tombstone tells us he made a fortune (bitter sarcasm) by tooth drawing, used the same line of argument before them. Is there not always a Tory spirit in science as in politics, else why do we daily find men elated with their success with chloroform and methelyne, using all sorts of insane objections to the safer nitrous oxide, backed up as it is by statistics and the life-blood of the inventor himself. A word on the elevator; it, too, has gone through its phases of development. From the rasorii of the Arabian we see them developing into the Vectes trifidi of Scultus, or three pointed levatory of Pare, but first used as looseners preparatory to the extraction. By-and-bye we find it modified and used as an extracting instrument, the projecting fulcrum resting on the tooth adjoining, whilst its hooked point served to prize up the offender. And this instrument enjoyed a wide reputation, as the names terebra, tariere, trivenello disclose. It is seen at its best in Garengéot. The difficulty of finding teeth wide enough apart to apply the lever on teeth to serve as fulcra, must, however, have greatly limited its use.

An instrument, however, of wider usefulness and application was brought out by Du Bois, a Frenchman, and dentist to the king. It was two-ended and curved like the perpendicular part of the letter **S**, and it made either the adjoining tooth or the socket itself the fulcrum. The ancient impulsorium or "Pedem bovinem" of the Latins gradually rose from a hand pressure loosener to mallet power under the new name of "punch," and was used side by side with the key. They were not so particular in those good old beefeating times as now, a lump of jawbone or a pint of blood did not draw much on their vital forces. If the tongue stood in the way of a long oral operation, they only made a hole in it and gave the unruly member to an assistant to hold at the end of a string. Even Mr. Fox, perhaps the best operator of his day, is recorded in using the punch to have knocked daylight through a lady's cheek, and a lady of *quality* too. With the exception of the rudimentary instruments of Albucas and Du Bois, we find no elevators capable of universal application for safely effecting the object in view until an early L.D.S. (Thompson) brought forward the one so well and deservedly known. This gentleman, with Mr. Cyrus Fay, who introduced

the neck fitting forcep, were rewarded, not by those most interested, the dentists themselves, but by the Society of Arts for their useful and beneficent designs.

If John Ardern *revived* the art of surgery, as declared by Dr. Friend, the above gentleman served more to *alter* the art of dental surgery than any who went before. Comparisons are odious, and we should make allowance for the different times in which they moved. A perusal, however, of the tattered MSS. referred to in the last chapter, presents rather a violent contrast, and shows either that there is a lost art, and that we have sadly retrograded, or that Ardern was, consciously or unconsciously, laying a good foundation for the French proverb, "He lies like a toothdrawer" (Sloane MSS., Lat., fo. 58 b.). "If one (says he) wish to rid of a tooth, let it be rubbed with gum of ivy—immediately it falls out. Also, oil or butter in which has been boiled frogs found beyond the seas, called chanterellus, which croak on the top of willows growing near the coasts. If teeth are anointed with this ointment, they fall out for certain; or if a tooth be touched with their blood, it easily falls out. And note! they are not poisonous, for the French eat them." The painless operations of the past certainly advanced in innocency if not in efficiency. Celsus gives us, A.D., pyrethin root, salt and vinegar, every three days till they fall out. Paulus Aegineta, A.D. 600, *spurge* Aetius, 600 A.D., red arsenic. Avicenna, A.D. 1000, arsenic worked up with grease of green frog. Gadesden, 1320, worm grass with strong vinegar. John Ardern, 1349, ivy gum, boiled frog and butter, or frogs' blood by itself. Culpeper (Pharmacopœia Londinensis, 1659), burnt pismires (eggs and all) for the same purpose. The labours of mankind, in its relation to science, has not been unlike those of Sisyphus—the stone has been painfully rolled up over and again, and found its way nearly to the bottom, often crushing the worker himself.

Had Mahomet never have risen, Cordova might have flourished a Christian Athens, and the forcep of Albucas have gradually developed to the forcep of Fay. Under the debilitating creed of fatalism, however, the extracting art of the Arab has degenerated to as low an ebb as is possible, for I am informed by a military officer who has seen them operate, that the common practice at present (sad contrast) is for the *dentist* to drive a nail between the roots, and strike it up under, until the forces of nature give way to those of art, and other of their operations are just as barbarous.

Although some of the dental doings of our forefathers are, when subjected to the standard of this age of printing, steam and specialism *ludicrous*, there is no reason why they should be made to appear entirely *ridiculous*. Not one of those whose "painless dentistry" I have quoted but in other directions kept the flame of medical science alight by laborious investigation and valuable discovery.

The weak points of their knowledge have, however, been too often unearthed without comment, and consequently the shaft of the caviller has cut off the glory of the hero. To gauge a man's genius from one or two imperfections, is as it were to pretend to read a man's character from the shape of his nose. Such critics are wanting the inner glasses of their mental telescopes, or use that delicate instrument wrong side up, consequently they see with complacent self-satisfaction the man upside down, and dwindled almost to nothingness. All things are progressive; there are no flights to perfection or that cannot be surpassed. We look at a forcep, and wonder such an instrument was not invented from the first, indifferent and thoughtless of the painstaking of the successive inventors that preceded its manufacture. Looking at things thus, a hammerless gun seems no great invention, yet it, too, went through all the phases subject to new discoveries.

There are many living who remember the flint firelock as a national weapon with all the trouble of loading, ramming, pan filling and chance firing. Then came the time wasting detonating cap, to be succeeded by breechloader and lastly the self-feeder. Truly, there seems on a cursory glance a sad want of perception, and it would seem that if the same trouble had been applied from the first as is spent over an abstruse mathematical problem we should have been rewarded from the onset with a complete instrument. This, however, is not so, as future ages who will laugh at us will demonstrate. Goldsmith observed very truly that application would make a respectable mathematician out of almost any material. Mathematics works on known methods, invention, however, is a step in advance, it is thought rising to a higher birth. Yet so unconscious has usage made us of the value of the modern instrument that it never strikes us till we are confronted by the ferocious instruments of our ancestors made in defiance of mechanical laws and anatomy, too often causing more injury than they were meant to repair. Beside of them our poorest instrument seems a prize. Yet that instrument which is as much the ensign of our profession as the lancet is that of the surgeon, the

sword of the soldier, or the compass that of the mariner, that instrument, I say, has to the philosophic mind a history written upon it, a history of evolution, the product of many minds converging to a special channel for a special purpose. When, therefore, we think of the departed millions who have suffered "the hell of all pains" rather than fly to those they knew not of, we ought naturally to feel a gratitude to those who have helped to bring about such beneficent results. Humphrey Davy once wrote an imaginative work, containing many beautiful and exalted thoughts, which tend to prove that imagination and science may go hand in hand. In one chapter he imagines himself on a distant planet, and thereon he sees an indescribable animal composed of such a multifarious series of organs that he was horrified at their appearance until he understood they were superior beings, and that those organs, like the sight and hearing, ministered to pleasures that arose from a higher organisation. Has not science done much the same for man? What would be the surprise of the "Wise men of the East," who, guided by the astrologic star, surveyed the cradle of the "Great Physician," if they, resuscitated, could have but one hour's discourse with a modern schoolboy? They would find their star gazing but simple amusement after hearing of our instruments, and their astonishment would heighten when they learnt that their astrology was considered by the savant, another name for nonsense. And are not all the sciences the same? Let us be chary, therefore, in being puffed up with ridiculous pride, like those who, like ourselves, were but creatures of circumstances, but rather think of them as pioneers to the blessings we enjoy.

" 'Tis not a new *science* we have chose,
But the same body put in better clothes."
(*Cotton MSS. of the Reformation*).

The wise man still, and for ever will be, "as a child playing with pebbles by the sea shore." The wave, if it does not swallow us up, carries away the work of most; and only they who build on the sure foundation of truth and disinterestedness will leave their marks behind in that great tower, which, standing on the shores of time, higher and higher casts its genial beams over the world, and, like the light from heaven, blesseth alike the evil and the good. Each earnest worker puts a stone, large or small, in that great tower, which shall never be finished till pride and heartlessness, pain and misery, shall be no more, and we become even as the sons of God.

The loftiest towers that pierce the skies,
Did from ten thousand efforts rise.

THE MOUTH IN BACKWARD CHILDREN (IMBECILE) OF THE MONGOLIAN TYPE.

By ROBERT JONES, M.D., B.S.Lond., F.R.C.S.Eng.

(Medical Superintendent, Earlswood Asylum.)

So much has been said and written about the mouth—the palate and the teeth—that it may be difficult to say anything fresh, perhaps more difficult to reconcile statements already made. We hear from one authority that a highly arched palate and contracted jaws are a sure sign of weak-mindedness; so sure, that imbecility can be diagnosed as congenital or otherwise according to their presence. Another authority regards contracted, badly-developed jaws, as an equally certain sign of a higher state of civilization—children of a “well-bred aspect” having the abnormality in about seventy per cent.; those of a “coarse, low, and brutal aspect” manifested the deformity in only seven to eight per cent., whereas those children of doubtful aspect occupied an intermediate position between the other two as regards the frequency of the deformity. The comparative disuse of the organs of mastication among civilized races who cook and soften their food before masticating, is probably confirmed by a statement made that irregularities of the teeth and contracted jaws are rare among savage races. It has at any rate become very generally acknowledged that a highly-arched palate is a common deformity in imbeciles, and the importance of the teeth as organs of mastication, with their necessity for healthy digestion, has led to certain observations which I shall shortly relate. From an examination of a large number of mouths in imbecile children, I am very strongly convinced that vaulted arches are not so common as has been supposed, and that these high palates occur mostly in two classes of imbeciles, viz., the micro-cephalic and the Mongolian type. As it is much more common in the latter, I shall refer only to this class. It is well known that there are among imbeciles as a genus several well-defined and distinct classes; no class is more clearly defined and more distinct than the class described by one authority in his ethnological classification as the Mongol or Kalmuck type. This class, composed of individuals having a very close resemblance to one another, is not a very large one; the species constitute about four or five per cent. of the total number of imbecile children. They are generally short in stature—adult males rarely measure

over five feet ; females rarely over fifty-five inches in height—they have a squat figure, and are either of a very light or dark complexion ; the head is small and round, the measurements from the root of the nose to the occipital protuberance, and from ear to ear, being nearly equal. The hair is never curly, it is straight, lank and thin, or straight and coarse, sometimes absent, at other times devoid of pigment ; the faces are round, length and breadth being nearly equal, the nose is usually flat over the bridge, and upturned and sharp as if bitten off ; the eyebrows tend to run outwards and slightly upwards, the eyelids more so, the outer canthus and the opening between the eyelids having a very distinct outward and upward tendency—hence the Chinese, Tartar, or Mongolian features—the eyebrows may have a distinctly arched direction, but the outer canthus has an almost invariable upward direction. The space between the eyes appears wider than normal, owing to the flattened condition of the bridge of the nose. The face is rough, the skin being generally coarse and loose ; the tongue is usually deeply transversely fissured ; their hands and feet are broad and short, and their joints are very supple, their usual and favourite position at ease being that of squatting, tailor-fashion, on their crossed legs, again like the Chinese. Their mental no less than their physical features are characteristic, the habits being lethargic, dull and reserved in company ; they are very observant, not easily roused to enthusiasm by others, although very playful and original when not watched ; they are very apt mimics of muscular movements, fond of music and colour, they can be educated with advantage up to a certain point and have a great desire when it pleases them to be useful to others. The smaller children of this type will turn over and over again the gaudy pages of a coloured picture book, in appreciation of varied tints. They are often near-sighted. Their articulation is defective ; they can rarely pronounce the sibilants, but improve by training ; they are usually short lived, but rarely do any of this class suffer from epilepsy. They are generally the youngest in large families, or there is much disparity in the parents' ages. It is very desirable to know this type in order to give a satisfactory prognosis to anxious parents.

Now with regard to the teeth and palate. As stated above, I am strongly of opinion that too much stress is laid upon a highly arched palate as a concomitant deformity in the weak-minded child. I am far from saying that this congenital irregularity does not occur, but

it occurs most frequently in the Mongolian, which type forms but a small percentage of imbeciles. Whether this irregularity be inherited or not, it is difficult to state; observation has proved that variations in the position of the teeth, at first sight seeming accidental, are often transmitted from parent to child, so is also the congenital absence of certain teeth; still, in some cases, it is doubtless that the high vault, mal-position of the teeth, together with irregularity of the maxillæ, may be due to developmental causes. Considering that the relation between dermal coverings and the teeth is a close one, as has been pointed out by Darwin in his reference to certain mammals which being most aberrant in their dermal coverings are also remarkable for the deficiency or redundancy in the number of their teeth, it is not surprising that we should find these organs and the palate peculiarly affected in Mongolian imbeciles in whom a definite and peculiar condition of the skin and hair has been found to co-exist. It is doubtless needless to refer to the fact that both the skin and its appendages with the teeth are similarly developed from the same epiblastic layer of the blastoderm, and what affects the one during intra-uterine life is likely probably to affect the other under similar conditions. The variations met with in these cases may conveniently be referred to under three headings: the *teeth*, *maxillæ*, and *palate*.

(1). *The Position of the Teeth*.—In no case was there marked prognathism, the front teeth of the upper jaw did not markedly project forward, neither was there a marked retreating backwards, but the lower incisors rarely met the upper in exactly a straight line; the most usual is for the lower jaw to be slightly more prominent than the upper, the molar teeth appear to be fairly normal, and the ramus is not unduly rectangular, perhaps the most frequent cause of projecting upper teeth. The lower incisors also appeared fairly uniform as regards enamel, although the enamel of the teeth in the lower jaw was much more frequently coated with tartar, due to the accumulation of saliva in the mouth, owing to the sluggish movements of mastication and deglutition in all children of feeble intellect, a peculiarity not by any means confined to the Mongolian type. The lower front teeth, as well as the upper, are not very regular, and it is well known that any abnormality in the position of the teeth has not the same chance of correction in the imbecile that it has in the healthy child—owing to the nerve force controlling the even and symmetrical pressure of the

lips and tongue upon the teeth being impaired—the tendency to correction is, therefore, absent or diminished.

(2). *The Maxillæ*.—The most frequent condition mentioned above, viz., the prominence of the lower line of incisors, may be referred either to a smaller alveolar ridge of the upper maxilla—possibly hereditary—or to a departure of the lower jaw from its normal form. It is unusual to find in these cases any marked deviation either in size or shape of the lower jaw, although an abnormal development (as when the teeth do not meet, being separated by a gap) in some cases must exist. In these, owing to the obliquity of the ramus of the lower jaw the molars alone meet, and that portion of the jaw in front is greatly increased compared to the portion bearing the molar teeth. In the upper jaw the contraction of the alveolus at the level of the bicuspid gives rise to the palatal deformity or irregularity which is the most constant feature in these cases, and which, unfortunately, cannot be remedied; in one child the highest point of the vault measured over $1\frac{1}{4}$ in. from the level of the crown of the teeth, and must interfere considerably with voice-production.

(3) *Palate*.—The V-shaped or wedge-shaped mouth is the most commonly met; in it the whole of the teeth of one or both jaws may be involved, and instead of the elliptical arrangement, the teeth occupy two converging lines which meet at an angle in the anterior part of the jaw, being frequently accompanied by a high and vaulted palate. The position of the teeth on the two sides is generally pretty symmetrical, but the deformity is usually confined to the upper jaw, there being an appearance of contraction at the line of the bicuspid teeth, giving the suggestion that the jaw had been pinched at this level and the palate directed upwards. As the contraction of the jaw is said not to be manifest until the eruption of the permanent teeth, and the molar teeth generally diverge from this point of contraction at the bicuspid line, it appears that unless the front portion of the jaw (which undergoes no material alteration in form after birth) has received during intra-uterine life its imprint for posterior divergence, the newly added portion at the back of its alveolar border will form an angle with it, and this angle corresponding with the contraction of the V-shaped palate becomes the deformity (either accidental or hereditary) which is at present impossible to remedy. Other causes of contracted jaws than those occurring during

intra-uterine life, such as premature extraction of temporary teeth, &c., need not here be discussed

In many of these children the enamel of the teeth is irregular, easily broken down, pitted, and grooved, and it would be interesting to find out the further relations between homologous structures developed from the epiblastic layer, such as the skin and appendages, the teeth, and the nervous system.

NITROUS OXIDE NOT AN ASPHYXIAN.

A CRITICAL STUDY.

By DUDLEY WILMOT BUXTON, M.D., B.S.,

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in University College Hospital, &c., &c.*

So much attention has during the past few years been bestowed upon the subject of anæsthetics, that it is surprising to find so important a matter as the *modus operandi* of nitrous oxide still shrouded in doubt, at least in some minds. The researches* which I commenced in 1885 were in a measure forced upon me by the consideration that if nitrous oxide were simply an asphyxiant, its range of utility and the limits of its safe application were necessarily very much straitened. Whereas, if upon the other hand, nitrous oxide, acting as such, possessed a power of producing anæsthesia and could be so employed without provoking asphyxial phenomena, it was evident that we should have much more confidence in commending its use, and should not hesitate to employ it even when the pulmonary circulation were in a condition which would wholly negative the administration of an agent acting as an asphyxiant.

Dr. George Johnson's letter, contained in your last issue, cannot be taken as a serious attempt to disprove the evidence of facts now familiar to all physiologists and students of anæsthetics, but Dr. George Johnson's name is rightly held in such high esteem among all students of science, that his utterances are liable to be accepted without the reserve which I am sure he would be the first to set upon them when dealing with matters lying outside the province of medicine proper. I propose to leave untouched Dr. Johnson's

* See "*Transactions*, Odontological Society of Great Britain, 1886." *Ibid*, March, 1887, "On Ankle Clonus, with special reference to its production under Nitrous Oxide."—*British Medical Journal*, August, 1887. "On Recent Researches in Nitrous Oxide Gas."—*Journal of the British Dental Association*, September, 1889.

interesting, although to me inconclusive, arguments in favour of his view of the mechanism of apnœa (asphyxia), and merely to review the brief mention of nitrous oxide contained in his essay on "Asphyxia," as well as his letter contained in pages 526-7 of your journal. Logical analysis of this last may thus be put: "Nitrous oxide anæsthesia may be obtained without complete asphyxia." *In conversation* [the italics are mine], Dr. George Johnson has learned from his friends, that "if inhalation be sufficiently prolonged, the invariable result is cyanosis with epileptiform (*sic*) convulsions." With the aid of Mr. Hamilton Cartwright Dr. George Johnson slew two rabbits, killing them by means of nitrous oxide, and found upon opening their chests a condition due to asphyxia. Evident importance is attached to these (?) experiments, as they are mentioned also in the "Essay on Asphyxia." Then follows the curious *petitio principii*, "Unquestionably nitrous oxide is a rapidly asphyxiating gas." To this is appended the rider, "but from what I have seen of Dr. Frederick Hewitt's interesting experiments with a mixture of nitrous oxide and a small proportion of oxygen, I believe that it will henceforth be possible to ensure as a constant result the production of complete anæsthesia without the distressing and perilous phenomena of asphyxia." This sentence is interesting as showing (1) Dr. Johnson's unhesitating belief that complete anæsthesia with nitrous oxide necessarily predicates the perilous phenomena of asphyxia, and (2) either ignorance, or a curious ignoring of Paul Bert's most important and classical researches upon the mixture of nitrous oxide and oxygen published more than ten years ago, and (3) the same omission to recognise the more recent work executed with rigid particularity of detail undertaken to explain the true physiological action of nitrous oxide, and carried out in this country, in America, and Germany. Lastly, we are urged to accept Dr. Snow's views, which suppose that a common action exists for all anæsthetics, viz., various ways of impeding the oxidation of the nervous tissues, and to regard this as more natural than "the assumption that each of these agents has a 'specific anæsthetic action.'" But why we should do so is left unsaid. I propose firstly to consider this analysis, and then to state the case for the plaintiff—nitrous oxide—showing why we should not regard that useful agent as "unquestionably a rapidly asphyxiating gas." Dr. George Johnson can hardly expect us to accept "conversations," when held with persons, even though they have "a large experience with

the administration of the gas," as evidence, without being told (1) Who the witnesses are? (2) What their special knowledge may be of the physiology of the question at issue? (3) What their methods of administering the gas may be? Nor will the canons of scientific research permit us to accept without grave reservation the experiments made upon two creatures (rabbits), and conducted by unknown methods, many years ago. Possibly every precaution to avoid error may have been adopted, or possibly the animals were simply placed under a bell jar, as in Sir Humphrey Davy's experiments, and no effort made to exclude asphyxial symptoms due to (i) prolonged deprivation of oxygen (ii), re-breathing exhaled and therefore noxious air and gas.

I have elsewhere pointed out that unless we exclude in a rigid way (1) re-breathing once exhaled gas, and (2) we supply fresh and carefully purified nitrous oxide gas so freely that no difficulty is felt, or exists in filling and emptying the lungs in respiration, we are dealing with a problem the terms of which are complex, and include not only the action of nitrous oxide, but others—the direct result of which must be the condition called apnœa (asphyxia). I do not for one moment deny that nitrous oxide may be given in such a manner that the patient is partly narcotised by nitrous oxide gas and partly asphyxiated by insufficient supply of the gas, and re-breathing exhaled gases. This "mixed method" I hold to be pernicious in fact and unscientific in principle, and I submit that no argument based upon the phenomena which follow this practice can be admitted as proving for, or against the specific action of nitrous oxide. Indeed, I should almost claim an *alibi* for nitrous oxide gas in the lungs of persons subjected to this "mixed method."

The arguments, based upon rigid experiments, showing nitrous oxide gas (i) is not an asphyxiant, are positive and negative.

It produces anæsthesia before it kills, whereas animals simply asphyxiated (rendered apnœic) are not anæsthetic until moribund, if then.

It kills in less than two minutes, whereas apnœa takes five. (These figures vary for different animals, but the ratio is maintained.)

Nitrous oxide, if given in such a way that the oxygen of the tissues is not exhausted, as by Paul Bert's well-known method, produces profound anæsthesia, but without any apnœal symptoms, and this state of things may be prolonged with continuous inhalations presumably indefinitely (over an hour). (This can of

course only be done by the use of Fontaine's chamber, and the inhalation of both the gases, under the pressure of two atmospheres. As given in this country and Germany, no result like this is obtainable, as it is impossible to administer a gas under pressure unless the patient's whole body is subjected to an equivalent pressure).

The process of events during the inception of narcosis by nitrous oxide is :—

The heart's action is hardly at all interfered with ; there is certainly no tendency in the large majority of cases towards lessening, much less abolition of the apex beat. Indeed, if the narcosis is pushed to the extent of stopping the respiration, the heart still beats on, so that animals are easily restored, even subsequent to respiration having been suspended. The pulse, when taken in persons not the subjects of fear, is at first slightly accelerated ; but as soon as consciousness is lost, it drops to the normal rhythm. In no case have I seen in a healthy person the radial pulse stop, or even materially weaken during the administration of laughing gas.

The record of the blood pressure under laughing gas also supports these statements. For the first period, that is until the blood becomes fairly saturated with the gas, the pressure remains almost unchanged ; later on a slight fall occurs, which is steadily recovered from if access of air be permitted, in a way quite in contrast with the wide excursions which occur in the post-asphyxial state. These gradual curves are not respiratory as they are present when artificial respiration is maintained in urarised animals.

Upon the rhythm of respiration nitrous oxide acts as follows : At first, during the stage of excitation, some acceleration takes place, as consciousness fails, however, the respirations grow slowly and more profound, the amplitude of the respiration curves being markedly increased. If, however, death is superinduced by the gas, the respirations grow more and more shallow and finally cease, while the heart quickly beats until at length that also stops. The wild conscious convulsions which obtain, when death is brought about by asphyxia, find no place in the procession of events under laughing gas.

I will not in this place narrate the phenomena which occur during nitrous oxide narcosis as regards the muscular and nervous systems. I will simply remark they evince, in the most striking manner, the most absolute non-accord with those which are brought about by asphyxia.

The experiments which led me to formulate the above data were in every case repeated, substituting asphyxia for nitrous oxide. If, as is contended by Dr. George Johnson, the conditions are the same, the results should have been the same, whereas, they were utterly diverse. Animals asphyxiated by breathing indifferent gases, such as nitrogen, breathing through a tube, or after ligature of the trachea, presented the well-known phenomena of the apnœic state. The heart's action at first laboured subsequently became tumultuous and incoordinate, the pulse, from extreme acceleration, passed to intermission and finally died away. Respiration became, after the usual irregular and ineffectual movements, marked by the peculiar rhythm which consists in a sort of Cheyne-Stokes gathering of respirations into a group followed by a period of stillness to be succeeded by a further group. Blood-pressure rapidly rose, and when access of air was permitted, rose and fell in wide curves reaching far above and far below the normal base line.

Experiments, if such be justifiable at all, when conducted upon patients are, in the matter of nitrous oxide gas, of little value as proof, because persons about to undergo an operation, however trivial, are the subjects of psychic perturbations of greater or less severity, which invalidate arguments relying solely upon phenomena observed whilst they are being anæsthetised. It is, I think, in this way that we can explain the curiously unusual train of events which Dr. George Johnson witnessed when standing beside patients taking gas. In page 31 of the "Essay on Asphyxia," we read, "After a period [of inhalation of nitrous oxide] which varies in different cases from forty to eighty to ninety seconds, the pulse suddenly becomes almost, or even quite imperceptible, the features become livid, the pupils are widely dilated, there is a state of general muscular rigidity; in short, all the phenomena of the first stage of an epileptic fit are present." This purports to represent nitrous oxide narcosis, as seen at the Dental Hospital of London, but is a record absolutely opposed to my experience alike at Leicester Square and when experimenting upon friends not about to be operated upon, and not the subject of craven fear. Further sphygmograms taken upon my own radial and that of friends, confirm the accuracy of my results. I may name among my friends Professor Schäfer, F.R.S., Professor Victor Horsley, F.R.S., Professor Mac William, of Aberdeen, Professor Dobinson Halliburton, and Dr. Rose Bradford, who were either actually supervising, as in the case of the first named, or helping me with the experiments;

so that I venture to assert that the results may be considered fairly credible.

In reference to Dr. George Johnson's remark about adopting Dr. Snow's theory of the mechanism of anæsthesia, I may be permitted to point out that Dr. Snow possessed no knowledge of nitrous oxide as an anæsthetic. He died in June, 1858, and it was not until after 1866 that this agent began to be used in this country. Dr. Snow's remarks referred to the alcohol series of anæsthetics, and could not, unless uttered prophetically, refer to the reagent of which I am writing.

It is certainly matter for regret, unless actual experiment and carefully weighed evidence can be put forward to disprove the facts and arguments which have been accumulating during the past ten or twenty years concerning nitrous oxide, and which incline to show it possesses a specific action, and does not narcotise by reason of its asphyxiating qualities, that any one, least of all so staunch a lover of truth and so keen and astute a physiologist as is Dr. George Johnson, should spread erroneous views concerning that most safe and valuable anæsthetic, nitrous oxide gas.

Reports.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE ordinary monthly meeting of the above Society was held on the 4th ultimo, at 40, Leicester Square. The President, Mr. HENRY SEWILL, M.R.C.S., L.D.S.Eng., in the chair. The meeting was well attended, and amongst other visitors were Mr. Christopher Heath, Dr. Felix Semon, and Dr. Greville MacDonald.

The CURATOR (Mr. Storer Bennett) drew attention to a recent addition to the museum, viz., the skull of a young, single-horned rhinoceros. The specimen was a rare one, and young animals were even more interesting than those fully grown, from the fact that an opportunity of observing the transition from the milk to the permanent teeth was afforded. Having explained in detail the relation which existed between the horn and the development of the incisor teeth, he proceeded to comment upon models of the mouth of a man aged 105, which had been received from Mr. Cormack, of Elgin, in which five teeth in the lower jaw still remained.

Mr. W. E. HARDING (Shrewsbury) mentioned an interesting case of dermoid cyst of the ovary. A domestic servant, aged twenty-six, was suffering from a swelling in the abdominal region, and applied to the Shrewsbury Hospital for treatment. The cause was diagnosed to be an ovarian cyst of not very large dimensions. Mr. Harris cut down upon it in the usual way, punctured it, and found it contained some solid substance. He then removed the whole of the sac, which on its removal was discovered to enclose teeth, above which there was some long hair. The sac contained a fluid very similar to rather thick pus, which on cooling coagulated. Mr. Harding had much pleasure in presenting a cast, which he had taken, to the museum; he had endeavoured to get the original preparation, but the local museum was unwilling to part with it. The origin of these cysts, he believed, was that in the earlier stage of intra-uterine life, a portion of the epiblast layer is entangled in that portion of the foetus which afterwards becomes the ovary, and there develops the teeth and hair. It was known that both were developed from dermoidal structures.

The PRESIDENT did not recollect a case of the kind having been brought under the notice of the Society before. They were uncommon, but by no means rare.

Mr. STORER BENNETT asked if any member of the Society could give them any information as to the structure of the teeth in these dermoid cysts; whether in making a section of a tooth, the dentine was proved to be ordinary hard dentine, or osteo dentine? So far as he was aware, there was nothing conclusive in the literature bearing upon the point. He thought if Mr. Harding could obtain a section of the tooth, it would add to the value of the record and to the *Transactions*.

Mr. WILLIAM HERN wished to ask Mr. Harding whether he had examined the tooth specimen since the cast was made. One tooth had apparently dropped out and seemed to have no root.

Mr. HARDING thought the tooth that was missing in the preparation, had fallen out since it was put into the bottle, and would be found lying at the bottom. None of the teeth were firmly attached, they appeared to be attached rather to ligamentous matter than bony structure. One gentleman near him had asked whether the patient's own teeth were defective: they were normal.

Mr. HUNT (Yeovil) quoted a case of abdominal cyst, which might be seen in the Hunterian Museum of the Royal College of Surgeons.

It was remarkable in that it occurred in the abdomen of a young man aged about 18. He afterwards died, and the *post mortem* revealed a foetus in the abdomen. He (Mr. Hunt) had full notes of the case at home, and, as he had remarked, the specimen might be seen in the Hunterian Museum.

Mr. GEORGE CUNNINGHAM mentioned a case of dermoid cyst where permanent teeth had been found affected by caries.

Mr. ENGLAND described the method adopted by him in perforating the antrum through an alveolar socket.

Dr. FELIX SEMON, F.R.C.P., then read a paper on
SOME POINTS ON THE ETIOLOGY, DIAGNOSIS, AND TREATMENT OF
EMPYEMA OF THE ANTRUM.

The views upon the whole subject were at the present time in a state of fluctuation. As to the frequency of the disease, while up to the beginning of 1886 only a few isolated cases would be found scattered here and there in medical literature, now there was not only a large special literature on the subject, but such trustworthy observers as B. Fränkel, Moritz Schmidt, Heryng, and others pronounced it to be a frequent one. Ziem, of Dantzic, to whom the revival of the whole question is due, had stated he had opened the antrum in no fewer than 227 cases, of which 191 had occurred within two years. Dr. Semon's experience did not allow him to subscribe to the comparative frequency of the affection, as with a material of several thousand cases of disease of the throat and nose, he had not seen more than a dozen cases of disease of the antrum in private practice.

Etiology.—Theoretically there was, of course, no reason why occasionally the suppurative process should not originate in the antrum itself, but in the great majority of cases the antrum was but secondarily affected—the pathological process starting from the nose or the teeth. The situation and anatomical relations of the antrum lent themselves to both modes of origin. Whilst on the one hand it opened into the middle meatus of the nose through the *ostium maxillare*, and was lined by mucous membrane directly continuous with that of the nose, on the other hand, the alveoli of the two bicuspids, the first molar, and often, also, the second molar and canine teeth, were separated from the mucous membrane only by a thin layer of bone. Sometimes the roots of the teeth actually perforated the bone and were covered by the mucous membrane only. In such cases mere extraction of a

tooth might open the antrum. Opinions as to local origin most curiously and markedly differed. Zuckerkandl favoured the nasal cavity as the more frequent seat of the disease, while Fränkel said that clinical observation had shown him that in the overwhelming majority of cases which he had seen, affections of the alveoli of the teeth had formed the cause of the disease; moreover, he pointed to the undeniable fact that of all the accessory cavities of the nose the antrum was by far the most frequent seat of purulent catarrh. This could in most cases only be explained by the alveolar origin of the inflammation. Finally, the nature of the secretion itself spoke against the nasal origin, for in cases of true empyema of the antrum the discharge was always *purulent*; whilst in the nose itself no purulent secretion was formed at the same time. Each of these views found a large number of adherents among leading authorities, but the preponderance was in favour of dental origin. Dr. Semon's own experiences were distinctly in favour of the latter. In several cases the etiology was rather obscure, but in not a single case could nasal origin with certainty be established.

Diagnosis.—Limiting his remarks to *chronic* empyema, he divided the cases into two classes:—(1) Those in which no obstacle existed to the discharge of the purulent secretion into the nasal cavity; (2) Those in which the ostium maxillare was obstructed. With reference to the first class, he pointed out that to Ziem belonged the merit of having shown on the one hand that certain symptoms, long regarded as characteristic, were not necessarily connected with the disease, and on the other that important, indeed almost pathognomonic signs, were formerly much neglected. Amongst the former were:—(1) Distension of the sinus; (2) Increased secretion when lying on the healthy side; (3) Pain in the infraorbital region; (4) Inflammatory swelling of the corresponding cheek. And amongst the latter:—(1) The *onesidedness*; (2) The *periodicity* of the discharge. In the great majority of cases in which the nasal opening of the antrum was not obstructed, the disease was characterised by unilateral periodical discharge from one nostril, the nostril being, of course, the corresponding one to the diseased antrum, and the periodicity corresponding to the different positions of the patient's head. Foetid secretion was another characteristic, the foetor being frequently preceptible to the patient himself, though not perceptible to those near him, thus the physician while examining a patient's nose, often perceives hardly anything of the terrible odour

which not rarely forms the patient's chief complaint. With these symptoms were sometimes combined neuralgic headache, nausea, depression of spirits, and general derangement of health.

Of the objective symptoms in such circumstances, by far the most important was the actual observation of the discharge of pus from the opening of the antrum. Sometimes it was possible with good illumination, and after introduction of a nasal speculum, to see without further preparation pus in the middle meatus. In other cases in which the mucous membrane of the nose was much swollen, previous cocainization might be necessary, or the swollen mucous membrane of the middle turbinated bone might have to be pressed aside with a blunt probe before pus would make its appearance.

The method of investigation was very simple. The nose having been thoroughly cleansed, and it having been ascertained by inspection that the nostril corresponding to the suspected antrum is quite free from secretion, the patient is told to lie down across a couple of chairs, supporting himself with both hands on the floor, head downwards, *but not too low*, and the *affected side uppermost*. After remaining for about ten or fifteen seconds in that position he is at once to resume the upright position without either blowing or inspiring through the nose. The speculum having been reintroduced, pus will be seen in the middle meatus in more or less quantity if the discharge really comes from the antrum.

Dealing with the second class of cases, viz., those in which the ostium maxillare is obstructed, Dr. Semon observed that the obstruction of this opening greatly modified both the diagnosis and symptoms. The obstruction might be caused by a very thick creamy consistence of the pus, by swelling or hypertrophy of the nasal mucous membrane in the neighbourhood of the ostium, by nasal polypi or foreign bodies in the nose occluding the opening, or by the formation of granulations around it. In such cases the symptoms which were formerly held to be characteristic of the affection, and which had been mentioned, were found more or less developed. In almost all cases in which free secretion was impossible, violent neuralgic pains in the face and the teeth of the upper maxilla of the affected side were complained of. Swelling of the soft parts of the cheek, sometimes of an erysipelatous character also occurred. In many cases the obstruction was not of a permanent, but of a transitory character; such cases might and often did exist for many years with alternating improvement and aggravation.

Diagnosis was difficult where temporary obstruction of the semilunar hiatus existed, or when the symptoms decidedly pointed to the passage of pus from one of the accessory cavities of the nose; but it could not be definitely ascertained which of these cavities, the maxillary sinus or the ethmoidal cells, the frontal, or the sphenoidal sinus was the affected part, owing to the excessive narrowness of the nasal cavity, or to swelling or thickening of its mucous membrane, or to the presence of nasal polypi.

Dr. Semon described the various methods recommended for demonstrating the actual occurrence of pus in the antrum in these cases, which included the introduction of a fine syringe or a slender ear catheter through the middle meatus into the semilunar hiatus, the introduction of cotton plugs or of laminaria bougies, percussion of the antrum, or the use of a catheter connected with an air balloon through the mouth and upwards behind the palate. The balloon is compressed while the patient closes both nostrils, and condensation of the air in the cavity in the direction from behind forward is obtained, by this means averting the danger of forcing the foul secretion from the antrum into the middle ear. Inasmuch as none of the methods could boast of universal success, though each had no doubt given satisfactory results in a number of cases, exploratory opening of the antrum was comparatively often necessary. This might be performed either from the alveolar process or from the nose. In view of the fact that the present means of diagnosis are far from satisfactory, it was to be hoped that the plan recently advocated and adopted by Heryng would fulfil his high expectations, viz., that of electric transillumination of the face. He introduces a small incandescent lamp of at least five volts into the patient's mouth, the room being perfectly dark. By this means according to Heryng's experience, the bones of the face are perfectly lit through, but if empyema is present the affected side *remains dark*, and the diagnosis is secured.

Treatment.—There were four methods, viz. :—

- (1) Simple drainage through the natural opening.
- (2) Opening of the antrum through the alveolus.
- (3) Opening of the antrum through the fossa canina.
- (4) Opening of the antrum through the lower meatus.

Methods 1 and 3 found but little favour, opening either through an alveolus or lower meatus being the course most generally adopted. The opinions as to the preference for either of these two methods were

just as curiously divided as on the etiology and on the best mode of diagnosing the disease. But, on the whole, Dr. Semon thought the balance of argument was in favour of opening through an alveolus, for reasons which he stated.

DISCUSSION.

The PRESIDENT, in the name of the Society, thanked Dr. Semon for his paper, and remarked upon its thoroughly practical character. He would make only one observation then, reserving other points that suggested themselves until later—viz. : that in his opinion cases of empyema of the antrum were much more common than was generally suspected. He had not always been of that opinion, but had recently come to the conclusion that, although not common, they were very far from rare. He hoped that there would be a good discussion, and invited Mr. Christopher Heath (who had done more than most surgeons to advance their knowledge of diseases of the jaws) to address them.

Mr. CHRISTOPHER HEATH said that he was aware that a good deal had been done abroad on the subject, and on the lines indicated in Dr. Semon's paper ; but he was glad to find that really after all, the advance upon the views originally laid down by Hunter had not been very great, for it would be found that he gave pretty nearly the modern views as to diseases of the antrum arising from the mouth. He (Mr. Heath) always thought it was a mistake to say that it originated from the nose, and consideration of common cases of catarrh, faceache, and aching of the frontal bones, pointed to this conclusion. He thought it might be said that really the cause of discharge of pus in the antrum was mainly from the teeth ; he had always been of that opinion, and was glad to find Dr. Semon's views agreed with his own. With regard to treatment, everyone would if possible avoid the removal of sound teeth. He had frequently perforated the jaw above the alveolus with satisfactory results, and for some reasons preferred it. In adopting this course, a fair opening is obtained, and it is fairly out of the way of food. He had met with cases where patients had lost no teeth, and it would be very hard upon them to take out teeth when an opening above the alveolus would answer the purpose. He used a small curved catheter, such as one he showed, which patients could soon learn to use themselves ; many of them, by putting a looking glass down in a good light before the window, could actually see the opening, and if they could not do it for themselves, a servant could introduce it for them. One

point he would insist on : patients frequently did not have the antrum what he would call thoroughly washed out, owing to the use of an inadequate syringe. He recommended a syringe which would throw a continuous stream, and induce a thorough cleansing by way of the nose. He was a little sorry that Dr. Semon did not go into those cases where there is no opening through the nose, fortunately they were very rare. With regard to diagnosis, he had had no experience of lighting up the face, and he could not believe that in every case the bones were thin enough to admit of diagnosis by this means. As to the length of time taken in recovery, some get well quickly, but those were the charming cases which formed the exception. Doubtless patients sometimes overdid the syringing ; very much depended upon the amount of the discharge, the health of the patient, and the care with which the cavity was washed out.

Mr. GEORGE WALLIS during the last ten years had considerable experience in cases of empyema of the antrum, and his observation had been that in nearly all of them there was some indication of the trouble originating in the teeth, though he knew of one case originating from the nose. Pus was found in the antrum, and it was one of those remarkable cases which rapidly healed. The patient, after syringing for a week, made a hasty trip to America ; on his return he asked if it were necessary to keep in the tube as the discharge had ceased, and Mr. Wallis said it might be removed. After the tube was taken out the discharge set in again after a few days, but another tube being inserted it got well at once. With regard to the extraction of sound teeth, Mr. Wallis was of opinion that cases of empyema of the antrum were extremely rare where all the teeth were sound. Having referred to the length of time cases of empyema run, he mentioned a recent case of his own in which the patient had suffered from the discharge for fifteen years ; he emphasised the importance of the point drawn attention to by Dr. Semon, viz. : that in empyema the patients are always themselves conscious of the offensive smell, whereas in ozæna they are not.

Mr. F. HENRI WEISS suggested that seeing that the antrum is not always one common cavity, but is often split up into several divisions by bony septa, whether more than one opening might not be made when exploring if pus were not discovered on the first puncturing.

Mr. CUNNINGHAM thought that if it were important to determine the question as to the alleged increased frequency of the disease, they

could help the author by giving him the results of their own practical experience. During twelve years' practice in England, he had not met with one single case amongst his own patients, and the only cases he had treated had been two referred to him by London dental practitioners.

The first case was that of a Cambridge undergraduate, aged 21, with a copious offensive discharge from the right nostril. The alveolus over the three upper first molar roots had been the seat of frequent slight abscess formations. No pus or discharge was observable on extraction of the roots. The mesio-buccal socket was considerably absorbed, and the insertion of a drainage tube into this socket, followed by almost daily irrigation with common salt solution, and later a very dilute phosphoric acid solution, in less than a month resulted in cessation of the discharge, and the closure of the opening into the antrum.

The second case mentioned was that of a middle-aged lady, and was interesting from the fact that the normal opening into the middle meatus appeared to be permanently occluded, and that the mischief was apparently connected with a lateral incisor as well as a bicuspid on the affected side.

From an experience of the results of the accidental perforation of the antrum, in the process of implantation, he would conclude that the exploration of the antrum by drilling through from the mouth, without removal of any of the teeth, would probably be attained without any untoward results.

Mr. WM. HERN said there were two practical points which bore upon the choice of opening and which would confirm Dr. Semon's preference for the alveolus. The first was the longer duration of the opening; it was known what a tendency existed in the tissues of the mucous membrane to close up, and it seemed to him that if an opening were made through the nose it could not be long before it had to be enlarged to prevent its healing up. The other point was that with many patients where the communication is patent, they could wash out the antrum without any artificial aid whatever. In this connection he might mention a case which was in the hospital some time ago, in which an opening had been made in the alveolus, and by simply leaning the head forward a stream of water could be made to flow through the passage. He was rather disappointed that Dr. Semon had not been able to give them some information as to the length of time these cases run and when the opening should be

closed. He had had a case in which he did not feel at all sure when to encourage it to close.

Mr. W. A. MAGGS mentioned a case under his care at the present time. The patient, a delicate girl aged 20, was sent to him by a surgeon in the country. There was nothing important in the case beyond the teeth involved ; both bicuspid and the first molar were gone. The patient had pain in the right side of her face, and a constant discharge every morning through the nostril on that side. On examination, he found that the roof of the mouth was resilient. The lateral tooth was stopped and slightly loose, he therefore had no hesitation in advising its removal, which was done under gas ; a discharge of pus and hemorrhage followed, but yielded to treatment with dilute carbolic acid.

Mr. F. J. VANDERPANT (Kingston-on-Thames) narrated a case wrongly diagnosed by the medical man as empyema, the purulent discharge being really due to diseased roots.

Dr. GREVILLE MACDONALD had very few remarks to add to Dr. Semon's admirable paper but on one important point, viz., local origin, he feared his own cases led him to a different conclusion to that formed by Dr. Semon. He thought that in the majority of cases which came under the surgeon's treatment, the origin was in the nose. He had had eighteen cases, fifteen of which were accompanied with unmistakeable evidence of either present or former inflammatory mischief in the nose, the other three dated from a severe attack of cold in the head. Referring to one or two points of diagnosis based entirely upon cases of his own, the subjective symptoms in two cases were severe supra-orbital pain supervening regularly every morning, and persisting in both cases for eighteen and twelve months respectively. Both were relieved entirely by opening the antrum. In the first case the pain was preceded by a formication which gradually intensified until it was relieved by a discharge from the nose. In the second case there was severe headache commencing with frontal pains and persisting for several hours. Further, pain might sometimes be elicited when not complained of by percussing either the nasal or malar bones. It was generally described by the patient as radiating along the alveolar border towards the ear, thus embracing the outline of the superior maxilla. Then, as to objective diagnosis, frequently this was a matter of exceeding difficulty as in so many cases there was on examining the nose so little to define where the suppuration was coming from. In

three cases the pus was flowing not only from the middle meatus but also from above the middle turbinated bone. In one of his patients, he afterwards proved that the suppuration was coming from the ethmoidal cells, flowing thence by a fistulous opening into the antrum. Very frequently evidence was found of what seemed to be nasal polypus but which must be considered to be granulation tissue; while in the neighbourhood of such polypi the probe often revealed the presence of carious bone, so that Dr. MacDonald had come to consider that whenever nasal polypus was associated with suppuration, there was considerable probability of co-existing disease of the antrum. He was of opinion that it was frequently justifiable to verify diagnosis by opening the antrum either through the nose or the alveolar border, but he thought this a matter for consultation with the dental surgeon. On the question of treatment, he remarked that he always preferred opening from the alveolar border, even if a sound tooth had to be sacrificed, for obvious surgical reasons. He had attempted opening from the inferior meatus at the earnest request of one patient, and succeeded in reaching pus. But this was at the cost of very profuse hæmorrhage. That this is likely to occur must be admitted when it was remembered that the inferior meatus is lined with that spongy erectile tissue, the smallest incision in which is apt to cause troublesome bleeding. The great difficulty, however, was in the subsequent treatment; he found it impossible to keep the drainage tubes in place, while it was impossible for the patient to conduct the cleansing of the cavity himself. Dr. MacDonald had never known patients complain of the pus flowing into the mouth, and had never seen evidence of the entrance of food into the antrum.

Mr. DAVID HEPBURN suggested a plan for facilitating syringing and keeping the opening free in the frequent cases in which an entrance to the antrum was made by way of the alveolus. His method was to replace the extracted tooth by one of vulcanite upon a plate, and drill out the tooth, leaving a uniform opening leading down to the artificial tube which passed into the antrum. By this means the patient had no difficulty in letting the nozzle of the syringe fall into the crown of the artificial tooth. Another advantage was that this opening could be so easily plugged, if this was thought desirable, and so preventing the access of food into the tube.

Dr. SEMON having replied, the meeting separated.

DENTAL HOSPITAL OF LONDON, STUDENTS' SOCIETY.

THE last ordinary general meeting was held on November 14th, Mr. WM. HERN, President, in the chair.

The minutes of the previous meeting were read and confirmed.

The following gentlemen were ballotted for and elected members of the Society :—Messrs. F. J. Armitage, Balding, A. Barnes, E. J. Blaine, A. T. Bart, C. F. Carter, B. A. Castello, G. Dalton, R. W. Gracey, W. E. Harrison, H. G. Humphreys, J. Keckwick, F. Ladmore, E. A. Mansell, W. H. Morgan, W. J. Pike, A. S. Pearse, W. J. Roberts, F. Rooke, A. G. Spiers, H. P. Spurr, W. Sansom, H. W. Taylor, Waller, C. H. Watson.

The proposed alteration in the rules, of which notice had been given at the previous meeting, was unanimously agreed to.

On *Casual Communications* being called for,

Mr. DAVIDS showed an old hand-engine for dental purposes ; also a lower molar tooth with very curved roots.

Mr. HARRISON showed a large upper wisdom tooth with four roots. The PRESIDENT called attention to the trouble an extra root may cause in treating the tooth.

Mr. HERN related a case which had occurred in private practice where an upper canine and central had been knocked out of the mouth by a fall. The patient was playing in a garden at the time, and the central tooth remained on the ground till next day, when it was cleansed and filled with gutta percha and replaced in the socket. Both teeth were firm in their sockets when seen after three months.

The PRESIDENT then called on Mr. BRIAULT for his paper on

DENTAL EDUCATION.

The reader opened the subject by urging all students to aim as high as possible with regard to the standard of their preliminary examination, and pointing out that as their fellow-men judged them rather by their general than their professional education, upon the extent of the former would depend in a large measure their status in society, and the fact of their being an honour or a discredit to their profession. He reminded them that their education did not cease on their leaving school or the hospital, but was the work of their lifetime, and dependent mainly on their own efforts.

He showed that, as under the present system of mechanical instruction, many students were unable to obtain a thorough training in their work, and consequently often qualified, without ever having "taken a bite" or "fitted a case in the mouth;" some alteration

was necessary, and it lay with the teaching dental schools to supply this long-felt necessity. He suggested that plenty of patients could be found for this purpose in the army, navy, and workhouses, to whom mechanical work was an absolute necessity of life, and which should be provided for them from the same funds as now supplies them with medical and surgical attendance.

He thought it was very perplexing to the student, immediately he commenced his filling work at the hospital, to have the surgeons advocating their different methods of practice, before he had learned any one thoroughly, and he advocated as a remedy to this the establishment, as far as possible, of a definite method of hospital practice, and when that had been acquired, the various methods of other operators to be seen and practised at the student's option. Among other difficulties presented to the student, he mentioned the extensive curriculum and the want of courses of lectures on such subjects as anatomy, surgery, and materia medica, suited to the requirements of the dental student, who was consequently often compelled to sit out lectures intended for men going in for the Fellowship, or London M.B.

He asked why are not students practically instructed at the hospital in the administration of nitrous oxide gas, when it is well known that many general practitioners, if called in, are unable to do so efficiently, and the work consequently falls to the dentist.

Running on to the subject of the advisability of taking the membership of the College of Surgeons, he held that while a man of exceptionally brilliant abilities might in four years take the license of the conjoint board, and at the same time become a good operator, with the average student this was almost impossible, and generally resulted in his leaving the hospital with an operative ability far inferior to that which he might have acquired had he devoted his time solely to operative work.

He asked if it would not be more satisfactory if the practical part of the examination of the college carried a higher mark value than it does at present. In conclusion, he stated as his opinion that it was not to additional medical diplomas we must look to raise the status of the profession, but to a higher individual general education and training, that should make each member of it worthy of the name of "gentleman."

The discussion on the paper was opened by Mr. DOLAMORE. He was not inclined to lay the blame of any deficiency in mechanical

training at the door of the mechanical assistant ; it depended more on the pupil himself : if he were able to do advanced work it would only too readily be given him, but it must be remembered that his blunders had to be made good by the mechanical assistant. He himself had been inclined to grumble at the length of time he had been kept backing teeth, &c., but he believed now his fingers were being trained just as they would have been in more advanced work. As in the workroom so in the hospital—each man must depend on himself, lectures are but guides to reading. He did not believe in special classes for dental students at the general hospitals, it would cause them to be looked on as a body apart from general students and this was to be deprecated. As regards the expense of the full medical curriculum, the speaker said he had yet to find that it was the rich who took it and the poor who did not. Our profession was peculiar in the opportunities it offered to men to earn a living even during their years of study, if they were not afraid of putting on an apron. He thought men in practice should be willing to help young fellows in this way, having them instead of a mechanic. On every ground he was in favour of taking a medical qualification. He did not see how one could expect to be looked on as a member of the medical profession if one did not do so.

Mr. FORSYTH did not agree with Mr. Dolamore that any one who liked could take the membership, he thought that the cost in money and time was a hindrance to many. He would remind Mr. Briault that dental students could take a course of anæsthetic administration at some general hospitals on payment of a small fee.

Mr. C. ROBBINS congratulated the society and Mr. Briault on the practical nature of the paper, especially on the stress laid on the mechanical part of our training. It was the foundation of our art. He agreed with Mr. Dolamore that in a three years' course the pupil had abundant opportunity of showing what was in him, and of acquiring that finger-training which would stand him in good stead when he exchanged his tools for instruments. He did not believe that any man who was afraid of donning the apron ever made a good dentist. A man should gain experience in taking impressions ; if he had not the chance as a pupil, he should seize every opportunity of taking models for regulation cases at the hospital. Each practitioner should endeavour to give his pupil facilities for modelling mouths. He pointed out how desirable it was for a student, while still at the hospital, to cultivate a pleasant manner towards his

patients. Many men failed in practice from want of a little tact. We must remember that our time of study does not end when we have gained our diploma. He himself felt more like a student that evening than when he first qualified.

Mr. MATHESON fully agreed with the speaker that the curriculum was faulty, at the same time we must bear in mind the difficulty of altering it, the alteration involving the concurrence of so large a body as the General Medical Council. He believed the time was soon coming when more stress would be laid on mechanical training, and when mechanics would form a subject for examination at the college. He would strongly advise all students to have at least three years in the workroom. He did not consider four years at all too much. He was fully persuaded that it is individual effort that tells and not outside training. In support of this, he would remind his hearers of the names of men who were famous for dentistry, all over the country, before any curriculum was established. We should be careful to deal gently with patients, and not to look on a tooth as a block of ivory.

Mr. J. F. COLYER agreed that it was desirable to aim high in the preliminary examination, but thought it was as much so to aim high in the professional examinations. It was essential that all should have a thorough knowledge of medicine and surgery, and this the L.D.S. did not afford. He had heard rumours that led him to hope that in the near future an advance was to be made in the L.D.S. Examination. He looked forward to the time when the M.R.C.S. should be compulsory on all dental students. He thought that students should have a chance of giving gas in their last six months.

Mr. BARRETT thought it was almost impossible to work both curricula together in four years.

Mr. MAY thought the account of the students' troubles in the workroom was overdrawn. He himself had been allowed opportunities of taking models.

Mr. SCHELLING thought that any extra degree should be in the direction of general education.

After a few words from the President, Mr. BRIAULT replied.

A vote of thanks was then passed to Mr. Briault, and to the gentlemen who read *Casual Communications*, and the meeting closed.

Dental News.

THE NATIONAL DENTAL HOSPITAL AND COLLEGE.

THE staff, students, and friends of the above hospital, dined together on the 8th inst., in the Venetian Room of the Holborn Restaurant, under the presidency of Mr. HENRY MORRIS, M.A., M.B., who was supported by Drs. B. W. Richardson, Hewitt, Allchin, Dudley Buxton, Messrs. Morton Smale, Felix Weiss, Storer Bennett, the Staff, and a large company of students and friends.

The arrangements were carefully planned and carried out, and not the least enjoyable feature of the evening was the excellent selection of music by the Bijou Orchestra and an excellent quartet party. After the usual loyal toasts had been duly honoured, Mr. Henry Morris presented the prizes to the successful students, who were introduced by the Dean, Mr. F. Henri Weiss. The following is the list :—

PRIZES.

DENTAL ANATOMY	-	-	R. S. Faro & J. N. Dunlop.
„ SURGERY (1888)	-	-	F. L. Haycroft.
„ „ (1889)	-	-	J. N. Dunlop.
„ MECHANICS	-	-	S. Keele.
METALLURGY	-	-	A. Moore.
THE RYMER GOLD MEDAL	-	-	J. N. Dunlop.

CERTIFICATES.

DENTAL ANATOMY	-	-	E. A. H. Field.
„ SURGERY	-	-	W. Rushton & F. T. Haycroft.
„ „ (1889)	-	-	F. E. Cutts.
„ „ (1889)	-	-	A. Moore.
„ „ (1887)	-	-	R. T. Faro.
„ MECHANICS	-	-	J. N. Dunlop & Arnold Prager.
METALLURGY	-	-	F. E. Cutts.
DENTAL MATERIA MEDICA	-	-	F. T. Haycroft & S. Keele.
ELEMENTS OF HISTOLOGY	-	-	G. M. Keevil.
MECHANICAL WORK (1888)	-	-	J. N. Dunlop.
STUDENTS' SOCIETY PRIZE	-	-	R. S. Faro.

The CHAIRMAN proposed the toast of the evening, "Success to the National Dental Hospital and College" in felicitous terms. He referred to the good work accomplished during a quarter of a century, and to the strenuous exertions which were being made to ensure a new and more commodious home for the institution, where its field of

work and scope of usefulness might be largely increased. The success of the Hospital and School were so closely allied, that any improvement in either must naturally react on both. He was of opinion that the establishment of dental education on a firm basis had wrought nothing less than a revolution from a professional standpoint. That more than one school existed in London was not cause for complaint; there was plenty of room for emulation and friendly rivalry. He then touched on the success of the National Dental Hospital as evidenced by the success of its students at the dental examinations of the Royal College of Surgeons, and finally addressed some words of encouragement and congratulation to the successful students.

The toast was responded to by Mr. GLASSINGTON and Mr. GEORGE CUNNINGHAM, both of whom entered somewhat fully and critically into the subject of hospital teaching and management.

The toast of the "Past and Present Students" was next given by Mr. SIDNEY SPOKES, who in a neat speech full of happy touches urged a high professional standard upon all practising dental surgery. Mr. Rushton and Mr. Prager responded.

In proposing the health of the Chairman the DEAN referred to Mr. Morris' long and distinguished connection with the Middlesex Hospital, with which so many dentists in the past had been associated during their student life.

The CHAIRMAN having replied, the rest of the evening was pleasantly spent in listening to some capital recitations, songs, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND. REGULATIONS RELATING TO THE DIPLOMA IN DENTAL SURGERY.

OLD REGULATIONS.

Education.

Candidates are required to produce the following Certificates :—

1. Of registration as a Dental Student by the General Medical Council, 299, Oxford Street, London, W.

NEW REGULATIONS.

Education.

Candidates who registered as Dental Students on or after the 1st January, 1890, are required to produce the following Certificates :—

1. Of registration as a Dental Student by the General Medical Council, 299, Oxford Street, London, W.

* These Regulations have been altered or re-arranged.

OLD REGULATIONS.

Education.

2. Of having been engaged during four years in the acquirement of professional knowledge, subsequently to the date of such Registration.

3. Of having attended, at a School or Schools recognised by this College, not less than one of each of the following Courses of Lectures, delivered by Lecturers recognised by this College, namely :—Anatomy, Physiology, Surgery, Medicine, Chemistry and Materia Medica.

4. Of having attended a second Winter Course of Lectures on Anatomy or a Course of not less than twenty Lectures on the Anatomy of the Head and Neck, delivered by Lecturers recognised by this College.

NEW REGULATIONS.

Education.

2. Of having been engaged during four years in the acquirement of professional knowledge, subsequently to the date of such Registration.

*3. Of having received instruction in Chemistry, including Chemical Physics, Practical Chemistry and Materia Medica.

*4. Of having attended, at a recognised Medical School :—

(a) A course of Lectures on Anatomy during not less than six months, or one Winter Session.

(b) A course of Lectures on Physiology during not less than six months, or one Winter Session.

(c) A separate practical course of Physiology during not less than three months.

(d) A course of Lectures on Surgery during not less than six months, or one Winter Session.

(e) A course of Lectures on Medicine during not less than six months, or one Winter Session.

Students are required to attend Examinations which are held in the several Classes.

OLD REGULATIONS.

Education

5. Of having performed Dissections at a recognised School during not less than nine months.

6. Of having completed a course of Chemical Manipulation, under the superintendence of a Teacher or Lecturer recognised by this College.

7. Of having attended, at a recognised Hospital or Hospitals in the United Kingdom, the Practice of Surgery and Clinical Lectures on Surgery during two Winter Sessions.

8. Of having attended, at a recognised School, two Courses of Lectures upon each of the following subjects, viz.:—Dental Anatomy and Physiology (Human and Comparative), Dental Surgery, Dental Mechanics, and one Course of Lectures on Metallurgy, by Lecturers recognised by this College.

NEW REGULATIONS.

Education.

*5. Of having performed Dissections at a recognised School during not less than twelve months.

6. Of having attended, at a recognised Hospital or Hospitals in the United Kingdom the practice of Surgery and Clinical Lectures on Surgery during two Winter Sessions.

7. Of having attended, at a recognised School, two Courses of Lectures upon each of the following subjects, viz., Dental Anatomy and Physiology (Human and Comparative), Dental Surgery, Dental Mechanics, and one Course of Lectures on Metallurgy, by Lecturers recognised by this College.

Students are required to attend Examinations which are held in the several Classes.

*8. Of having been engaged during a period of not less than three years in acquiring a practical familiarity with the details of Mechanical Dentistry, under the instruction of a competent Practitioner. In the case of qualified Surgeons evidence of a period of not less than two instead of three years of such instruction will be sufficient.

This instruction may be taken prior to the date of registration as a Dental Student.

* These Regulations have been altered or re-arranged.

OLD REGULATIONS.

Education.

9. Of having been engaged, during a period of not less than three years, in acquiring a practical familiarity with the details of Mechanical Dentistry, under the instruction of a competent Practitioner, eighteen months of which instruction may be taken prior to the date of registration as a Dental Student. In the cases of qualified Surgeons, evidence of a period of not less than two instead of three years of such instruction will be sufficient.

10. Of having attended at a recognised Dental Hospital, or in the Dental department of a recognised general Hospital the Practice of Dental Surgery during a period of two years.

11. Of being twenty-one years of age.

NOTE. — Professional study prior to the date of registration as a Dental Student is not recognised except in the case of instruction in the details of Mechanical Dentistry; see Clause 9.

Examination.

The examination is partly written, partly practical and partly oral.

The written examination comprises General Anatomy and Physiology, and General Pathology and Surgery, with especial reference to the practice of the Dental Profession.

NEW REGULATIONS.

Education.

9. Of having attended at a recognised Dental Hospital, or in the Dental Department of a recognised general Hospital, the Practice of Dental Surgery during the period of two years.

10. Of being twenty-one years of age.

NOTE. — Professional study prior to the date of registration as a Dental Student is not recognised except in the case of Chemistry, Practical Chemistry and Materia Medica, and of instruction in the details of Mechanical Dentistry; see Clauses 3 & 8.

Examination.

The examination is partly written, partly practical and partly oral.

*The written examination comprises General Anatomy and Physiology, General Pathology and Surgery, Dental Anatomy and Physiology, and Dental Pathology and Surgery.

OLD REGULATIONS.

Education.

At the Practical Examination Candidates are required to prepare and fill cavities with gold and other material, &c., and are required to provide their own instruments.

The oral examination comprises the several subjects included in the curriculum of professional education, and is conducted by the use of preparations, casts, drawings &c.

Members of the College, in the written examination, will only have to answer those questions set by the Section of the Board consisting of persons skilled in Dental Surgery; and in the oral examination will be examined only by that Section.

NEW REGULATIONS.

Education.

* At the Practical Examination Candidates may be examined.

(a) On the treatment of Dental Caries, and may be required to prepare and fill cavities with gold or plastic filling or material, or to do any other operation in Dental Surgery. (Candidates must provide their own instruments.)

(b) On the Mechanical and Surgical treatment of the various irregularities of Children's teeth.

(c) On Mechanical Dentistry.

The oral examination comprises the several subjects included in the curriculum of professional education, and is conducted by the use of preparations, casts, drawings, &c.

* Candidates who have passed the Second Examination of the Examining Board in England, or who shall produce evidence of having passed the Examination in Anatomy and Physiology required for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Anatomy and Physiology required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in those subjects.

* These Regulations have been altered or re-arranged.

OLD REGULATIONS.

Education.

A Candidate whose qualifications shall be found insufficient will be referred back to his studies, and will not be admitted to re-examination within the period of six months, unless the Board shall otherwise determine.

Examinations will be held in May and November in each year.

Candidates are required to give fourteen clear days' notice of their intention to present themselves for examination.

The fee for the Diploma is Ten Guineas.

NEW REGULATIONS.

Education.

*Candidates, who are Members of the College, or who have passed the Examination in Surgery of the Examining Board in England, or who shall produce evidence of having passed the Examination in Surgery for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Surgery for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in General Surgery and Pathology.

A Candidate whose qualifications shall be found insufficient will not be admitted to re-examination within the period of six months, unless the Board shall otherwise determine.

Examinations will be held in May and November in each year.

Candidates are required to give fourteen clear days' notice of their intention to present themselves for examination.

The fee for the Diploma is Ten Guineas.

* These Regulations have been altered or re-arranged.

NOTE.—*A ticket of admission to the Museum, to the Library, and to the College lectures will be presented to each Candidate on his obtaining the Diploma.*

EDWARD TRIMMER, *Secretary.*

14th November, 1889.

N.B.—All applications with reference to the Examination for the Diploma in Dental Surgery should be addressed to Mr. F. G. Hallett, Secretary of the Examining Board in England, Examination Hall, Victoria Embankment, London, W.C.

ROYAL COLLEGE OF SURGEONS.**PASS LIST.**

THE following gentlemen, having passed the necessary examinations, were, at a meeting of the Council held on November 14th, admitted Licentiates in Dental Surgery :—Ambrosoni, Francis Angelo, Grand Parade, Brighton ; Bright, Stanley Charles, Via Assaroth, Genoa, Italy ; Carter, Edward George, Edgware Road ; Cowell, Charles Joseph, Christian Road, Preston, Lancashire ; Day, Joseph Henry, Alfred Street, Brompton ; Dunlop, James Nairn, Lord Street, Southport ; Haycroft, Frederic Theodore, South Lawn Terrace, Exeter ; Harper, Henry Guy, Charleville Road ; Knowles, Albert Vernon, Albion Place, Reading ; Mallet, John Aubrey, Powderham Crescent, Exeter ; Parrott, John Ernest, Hagley Road, Birmingham ; Richardson, Frank Victor, Kibworth, Leicester ; Seville, John William, Belvedere, Bath ; Spray, George Goldfinch, Conway Road, Canton, Cardiff ; Stoddart, Walter Guy, Lower Seymour Street.

Twenty-five candidates presented themselves, of whom ten were referred to their studies for a further period. The next examination takes place in May, 1890.

POPULAR LECTURE

Mr. GEORGE CUNNINGHAM, of Cambridge, gave a lecture to the working classes, at the Cleveland Hall, Cleveland Street, W., on the 21st ultimo, entitled, "Our Teeth ; How they come." The large attendance of "mothers" was a gratifying evidence that the class the lecture was intended to benefit are really desirous of being informed. The lecture was almost profusely illustrated with a series of admirable dissolving views, showing the development of the teeth, from the embryonic stage upwards. Addresses of this description to the poor and uneducated cannot but be beneficial to the community, and Mr. Cunningham succeeded to a great extent in overcoming a difficulty which every speaker on such a subject must feel to be immense, viz. :—that of bringing himself down to the intelligence of his audience. If he can develop his plan of conveying his lessons by analogy still further, it will be well. To find everyday names, however, for odontoblast, epithelium, cementum, periosteum, etc., which would reach the understanding of the uncultivated, is no slight task ; but if this scientific terminology can be got rid of, it would be a distinct gain. If we were inclined to criticize a lecture so excellent in motive and design, we would suggest the shortening, if possible, of the part treating of foetal life:

THE DENTAL RECORD, LONDON: DEC. 2, 1889.

THE NEW REGULATIONS FOR THE DENTAL DIPLOMA.

THE Dental Diploma of the Royal College of Surgeons of England has at last attracted the mental eye of the College authorities; and not a moment too soon, for an ever-widening wave of discontent had been rolling over the dental world—at least over those who have any real interest in the subject of education—and reforms were pretty loudly called for on all sides. A glance at the new regulations found on another page, and comparison with the old state of things, will at once show that we have gained at least something fairly substantial. Let us be thankful for small mercies; more may follow if we only wait long enough.

It will be well first of all to note the alterations in the curriculum itself. The subjects of Chemistry, Practical Chemistry, and Materia Medica, may be studied *before* the student enters hospital, so that he is relieved of three courses of lectures on subjects in which he will not be examined. Further relief is granted by allowing the student to complete his course of mechanical instruction before registration. But here an error has crept in to which we would call attention; for in Clause 2 it is distinctly stated that a period of *four years* must be passed “in the acquirement of professional knowledge, *subsequently* to the date of such registration,” so that the relief granted in Clause 8 is annulled by Clause 2. This is evidently an oversight and will no doubt be put right. The second course of Anatomy is very properly done away with, and a course of Practical Physiology substituted. The latter will prove to be a distinct boon to the dental student, who before was not officially provided with a scrap of instruction on the very important subject of microscopy. We say *officially*, for we are aware that at some dental hospitals there is at least some provision made in this direction, but we very much doubt whether it is possible to instruct dental students at

special hospitals in practical physiology as thoroughly as at a general hospital, where there is a laboratory specially adapted for the purpose, and plenty of material — both normal and pathological—close at hand for the purposes of section cutting. The period for dissecting has been altered from nine to twelve months, and although the purely dental student can scarcely afford an extra three months of dissection—which in ordinary circumstances is quite unnecessary for the L.D.S. examination—yet it will ultimately be found to be a distinct gain, as we shall presently attempt to show.

By a strange oversight the old clause which defined the nature of the examination, altogether ignored to mention the fact that candidates might probably be expected to answer at least a few questions on Dental Anatomy and Dental Surgery, and we had the anomaly of an examination (at least on paper) for a special diploma where its own speciality was shelved! The clause has now been amended, and appears clothed and in its right mind. We note also that “mechanical dentistry” is, for the first time, announced as a subject of the examination. This is as it should be. Dental mechanics have been ignored too long, and we are not at all sure but that to this cause may be traced the large amount of lamentable ignorance displayed by a great majority of dental students of the present day. For the future it will be distinctly wholesome for them to know that their knowledge on the subject will not be taken for granted, but will be thoroughly tested by both theoretical and practical means. We trust that the Examiners will make this subject as practical as those of stopping and the treatment of irregularities, and we shall then, and perhaps before very long, lose sight of that pseudo-aristocracy which boasts of its dainty hands which may not be soiled by the vulgar manipulations of what they call the “*workshop*.” Too many men look upon mechanical work as they do upon the rich but vulgar acquaintance who entertains us remarkably well, but is not altogether desirable, at least to talk about. But here the similitude ends, for while the former may, the latter may not be robbed of his vulgarity.

Having considered the alterations in the curriculum and the examination in detail, it is as well to enquire as to what effect the change, as a whole, is likely to have upon dental education in this country. In the first place, the curriculum of the dental student at the general hospital is (with the insignificant exception of practical pharmacy) placed upon an absolute equality with that of the general student. The position of the dental student in this respect has, up to the present time, been a somewhat anomalous one, and there has been a distinct tendency, both on the part of teachers and students, to look down upon him.

It will now be almost impossible to distinguish between the two classes of students, for they will both be attending precisely the same lectures, class examinations, &c. But further than this, the intelligent dental student will find that inasmuch as he is working "on all fours" with those who are being prepared for the first and second examinations for the conjoint diploma, he might just as well put his "shoulder to the wheel," and with a little extra exertion actually present himself at the examinations for which he has practically been prepared. Beyond this there is but one step—and this he is almost bound to take—between him and the double diploma which makes him a member of the medical profession beyond cavil or doubt. We think we can distinctly foresee the time when every dentist will be a qualified surgeon, and when he will be no less a thoroughly practical dentist *because* he has a comprehensive knowledge of surgery. There may be an intermediate course which was foreshadowed in Mr. Morton Smale's remarks at the recent Dental Hospital Dinner, where the Dental Student will be required to pass the first and second examinations for the conjoint diploma *before* he is allowed to present himself for the dental portion of his examination. This would be an immense step in the right direction, and would place the L.D.S. of England upon a footing which it has not hitherto enjoyed, with a far better position than the proposed *higher degree* in dentistry, with brighter prospects for the profession as a whole, with surer promise for the comprehensive know-

ledge of the individual student. It may be long before this last measure of reform is granted us—it may be long before we are convinced as a body of its desirability; meanwhile we must work away at making the education of our students as thorough, as practical, as we possibly can, and we have not the least doubt but that in the conscientious exercise of what we deem to be our duty, the time will dawn when we shall be able to convince many who are now sceptical, that whilst we yield to no one in our desire to make our students practical dentists, we are still anxious that the scope of their education should be enlarged, and their position as members of the great profession of medicine made absolutely secure.

MONTHLY STATEMENT of operations performed at the two Dental Hospitals in London, and at the Dental Hospital, Manchester, from September 30th to October 31st, 1889 :—

					London.	National	Victoria.
Number of Patients attended ...					—	1982	1120
Extractions	{	Children under 14	...	...	477	333	805
		Adults ...	...	...	932	540	
		Under Nitrous Oxide	...	...	1063	858	135
Gold Stoppings	...	...	...	...	510	96	35
Other Stoppings...	...	...	...	...	1459	397	93
Advice	...	...	...	...	179	487	—
Irregularities of the Teeth	...	...	...	...		71	—
Miscellaneous and Dressings	...	...	...	...	533	156	450
Total ...					5,203	2,938	1,518

BIRMINGHAM DENTAL HOSPITAL.

The number of patients treated during the month of October was 444—Males, 123; Females, 186; Children under ten years of age, 135. The operations were as follow:—Extractions, 425; gold fillings, 10; other fillings, 75; miscellaneous and advice, 87. Anæsthetics were administered in 21 cases.—FRED. R. HOWARD, *House Surgeon.*

EXTRACT.**THE VALUE OF A BALD HEAD.**

A MEDICAL correspondent contributes to a lay contemporary some remarks upon his profession, which, although in some respects containing a good deal of truth, are nevertheless confessedly amusing. His main object in view is to show that he has made a gross mistake in joining the ranks of medicine, instead of investing his money which had been spent upon his education, in some business concern. He describes himself as a failure, and this after having worked exceedingly hard at his profession. The cause of his failure he attributes to the absence of two things which are chiefly essential to success in the medical profession. These he asserts are, in the first place, money ; and in the second, a bald head. "I have no money and my hair is inconveniently thick. Incipient baldness gives the appearance of a 'high and dome-like forehead,' and inspires the ladies with confidence. The fortunate possessor of this beautiful feature is pronounced 'very clever,' which settles the matter. Besides, it is almost indispensable for a 'good bedside manner.' All my medical friends who are getting on well have either money or bald heads ; most of them have both." It is, no doubt, very much to the advantage of a young practitioner to exhibit a "modern antique" appearance, and nothing contributes so greatly to this end as a head which is innocent of hair. There is a real commercial value in a bald head, but this value is by no means confined to the medical profession. Whatever advantages, however, it may confer on a "business young man," to a medical man a fair estimate under favourable circumstances would be, at the lowest, five hundred a year. The assumption of age and ripe philosophy which a man can safely indulge in whose hair follicles upon the top of his head have in early manhood undergone a process of fatty degeneration, leaving a white expanse of reflecting integument, is a matter of common observation. The public are impressed by the appearance of things under these circumstances : a bald head will carry conviction to their minds when nothing else will—saving, perhaps, a flowing beard. Even the lower animals are not insensible to its attractions. It is recorded that an ostrich once sat down upon the bald head of an Englishman, under the impression that it was an egg which required hatching. The circumstances were favourable to this slight error of judgment, and the sagacious bird must be acquitted of having purposely

attempted to play a practical joke. But in this matter, as in all things else in life, appearances are everything. No one knows better the value of a bald head than he who possesses it, at all events in medicine; but how strangely captious is Nature, for while one man, greatly to his worldly prosperity, conveniently finds his head becoming bald, another has to seek consolation where he can under the depressing circumstances of knowing that his head is the only place upon which he cannot get hair to grow.—*The Medical Press and Circular*.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

GAS OPERATIONS.

To the Editor of the DENTAL RECORD.

SIR,—In the discussion on Anæsthetics at the last Students' Society Meeting of the Dental Hospital, as reported in this month's RECORD, I fear I am made to say what I certainly never gave utterance to, and so hope you will kindly insert this in correction.

I am made out to have said, "It was a great failing in the law, that dentists were not legally entitled to administer gas." In fact, I never said anything of the kind. I believe there is no law preventing any one from giving gas—a shoeblack or a scavenger have just as much right to give gas as an M.D., according to the present state of the law.

I said that it was a disgrace to civilization that a dentist should be allowed to give gas and operate at the same time, and thus to place his patient's life in jeopardy, even if it is only for a short time. A man cannot be concentrating his attention upon his extraction or other operation, and at the same time be sharply on the look out for symptoms of cessation of respiration or heart failure.

I maintain that there should always be a medical man present whenever gas is given; an unqualified assistant, a footman, a maid or man servant, or a butler, are not proper persons for this duty.

I am also made to say that I considered it "*almost* dishonest" for a man to give gas and operate too. I consider it "*quite*," not "*almost*."

When patients place their lives in our hands for a time, they

expect that we are going to treat them justly, and not expose them to greater risk than is necessary.

The only argument worth listening to against calling in a medical man, is that he has to be paid a fee, and supposing that the dentist wants his remuneration for the extraction, and the medical man his for the gas, it makes it come to a double fee; whereas, by the dentist doing it all himself, and running the risk of his patient going to the better land, he can either save the patient's purse, or else put the extra fee in his own pocket.

I can only say in reply to this argument, that if the patients prefer to save their half-fees, and take the risk, they can go and die in somebody else's chair.

Many a time have I heard Mr. Woodhouse Braine say that the operator should not take his eyes out of the patient's mouth until he has finished, and if the operator's eyes are in the patient's mouth, I should like to know how they can be expected to be outside as well?

I am, Yours, &c.,

9, Christchurch Road, Folkestone,

GEORGE SEYMOUR.

November 6th, 1889.

STUDENTS' SOCIETY, MANCHESTER.

To the Editor of the DENTAL RECORD.

SIR,—In connection with the above Society there has been gradually developing from local generosity a library and museum. With an object of further increasing their manifest usefulness a wider appeal is now justified in being made, not only on account of the increased number of students, but the library though consisting of standard works, numbers yet merely some few copies. Therefore all gifts of books, pathological specimens, casts, photos, old instruments, Wolrab's bottles, &c., will be most welcome to the Council, and on its behalf I shall be most happy to acknowledge their receipt.

I am, yours, &c.,

DAVID HEADRIDGE.

(Librarian and Curator.)

Victoria Dental Hospital,

98, Grosvenor Street, Manchester.

NEW INVENTIONS, APPLIANCES AND REMEDIES.

We invite *all manufacturers* to send us anything useful and novel, which we shall be pleased to report upon.

TICE'S PATENT TOILET MIRROR.

WE have received one of these mirrors for report, and have tested its capabilities with a result which reflects great credit upon the ingenuity of the inventor. It is a simple arrangement of



an ordinary and a mouth mirror, both of which are mounted on ball and socket joints having a great range of movement. Any person of ordinary intelligence may examine any part of his own mouth, and this will be appreciated especially by those who are particularly anxious about the condition of their teeth. The mirror supplies a distinct want, and will, no doubt, be appreciated by the public.

ANNOUNCEMENTS.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE next meeting of the above Society will be held at 40, Leicester Square, W.C., on Monday, December 2nd, at 8 p.m. *Business—Casual Communications* by Messrs. J. Ackery and W. B. Paterson, "A peculiar case of fracture of Supr. Maxillæ"; by E. Lloyd-Williams, "A case of Sarcoma of Upper Jaw"; by G. Cunningham, "Dermoid Cyst containing teeth;" also by Mr C. S. Tomes, F.R.S., and by Mr. David Hepburn

APPOINTMENTS.

ANDERSON, GEO., H., to be Dental Surgeon to the Eccles and Patricroft Hospital. (There has been no previous appointment.)

VACANCIES.

ST. GEORGE'S HOSPITAL, Lecturer on Dental Surgery. Applications by December 8th, to the Dean.

NOTES AND QUERIES.

Communications respecting Editorial matters should be addressed to the *Editor*, 2, *James Street, Buckingham Gate, S.W.*

All Advertisements and business matters should be sent to the *Publishers*, 6 to 10, *Lexington Street, W.*

Correspondents must authenticate their communications (which should be written on *one side* of the paper only) by attaching their names—not necessarily for publication.

Queries and Answers are invited on all subjects of interest, either surgical, mechanical, or ethical.

NOTES.

BLACK DIAMOND DRILLS.—Several years ago I brought under the notice of the profession some black diamond drills, which I had found invaluable for counter sinking the tubes in pin teeth, &c. They were procurable at a very small cost from $\frac{1}{32}$ to $\frac{1}{8}$ inch in diameter. I have used them for many years with every satisfaction, and wishing to obtain more I applied at the address where I applied years ago, but could not find the maker, who had moved; with some trouble I found he had gone to 356, King's Road, Chelsea. I write, therefore, to let practitioners know where they can obtain these drills. I use $\frac{1}{8}$ drills, and give but 2s. for them. They never seem to wear out, although their setting does. They are mounted at the end of an iron or soft steel wire, about the size and length of an ordinary engine burr. They can easily be fitted into the workroom lathe head, or when of burr size run in the dental engine; and if after long use the diamond works loose, a workman of ordinary intelligence can easily remount it. I use for the purpose a bit of old tricycle spoke. This tool, either with or without a little water, will most quickly and easily countersink a tube tooth, say where the pin stands upon a little rounded eminence—no tool made comes near it in speed and efficiency. This is my opinion after many years' experience. I may add that a small drill mounted in a pen holder, or small bit of wood, makes an excellent instrument as a writing diamond, and for years I have used one thus for writing the names on my microscopic slides, and given them also to friends who are microscopists, who have been much pleased with them.—W. A. HUNT. L.R.C.P Lond., &c.

Yeovil, Nov. 11th, 1889.

QUERIES.

THE STRENGTH OF MOUTH WASHES.—Will you be good enough to tell me through your "Notes and Queries" column of DENTAL RECORD, whether it should be understood that the prescribed gargarismata in "Stocken's Dental Pharmacopœia" are to be employed by patients as written, or whether they are to be diluted for use? Take for example:—

Liq. Potass. permang., 3j.

Aquæ Destil. 3x.

Is the mouth to be rinsed with this full strength?—B. A. F.

*** [The strength of a mouth wash must always be regulated by the necessities of the case. The formulæ referred to are to be used as prescribed. The strength of the permanganate of potash gargle is not excessive. Squire (in his Companion to the B. P.), recommends a gargle exactly *double* the strength. It is as well to discard permanganate of potash, where possible, as it seriously discolours the teeth.]

ANSWERS.

POROSITY IN RUBBER.—This is caused, in thick cases especially, by the too rapid evolution of the sulphuretted hydrogen given out by the rubber during the first twenty minutes of the vulcanizing process, the surrounding plaster being unable, meanwhile, to absorb the gas with sufficient rapidity. It can be prevented by simply keeping the thermometer at 270° for about fifteen minutes after it has risen to that degree, and then allowing it to rise to 315° for one hour longer.—H. L. S.

POROSITY OF RUBBER.—"A. C." might have read an answer to the query as to the cause of porosity in vulcanized rubber, had he sought it in the following (January) number of the DENTAL RECORD. Mr. Fletcher was good enough to therein write, as his supposition, that it is due to air being worked into the rubber through careless manipulation; but this, I opine, is a mistaken theory, for I believe there are very few cases indeed where small air cavities are not created in packing, but these cavities become obliterated on closing the flask. And, again, I differ from Mr. Fletcher as to *deficient* steam pressure causing it, for the only occasions on which rubber becomes "blown" or "porous" are when the steam pressure employed in vulcanizing is *too high*; it never occurs when working at a regular and low steam pressure. The inclination to become porous varies with the different rubbers—black rubbers being more liable than any of the others, and it is a good plan, when using black or brown rubbers, to obtain small pieces of ready vulcanized rubber by breaking up old cases, and pack them in the centre of the new rubber in the thick portions of the case, such as behind the back teeth, &c. If the temperature during vulcanizing is permitted to fluctuate, black and brown rubbers are almost certain to become porous, but where a self-governing steam gauge is used, there is no likelihood of it happening—it is only with the less reliable thermometer that its operation is so often made manifest. A more scientific, and, I venture to add, a more correct theory of the cause of porousness, may be found in "Richardson's Mechanical Dentistry," 4th edition, pp. 578-580, attributed to Dr. Alf. Boek, and which I would advise "A. C." to read entire, as it cannot be epitomised without detriment—FRED. W. BELLAMY.

[To avoid delay, ALL COMMUNICATIONS for the pages of the "RECORD" (other than Advertisements) should be sent to the Editor at 2, James Street, Buckingham Gate, S.W.]

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